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# HEALTH & MEDICAL MANPOWER

# DEVELOPMENT OF MODERN MEDICAL EDUCATION IN INDIA AND STUDENT WASTAGE IN MEDICAL COLLEGES

INSTITUTE OF APPLIED MANPOWER RESEARCH
INDRAPRASTHA ESTATE, RING ROAD, NEW DELHI
&
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This study initiated in the Ir npower Survey. Two wo ting out the results edical Educa- tion in I ge and Stagna- tion (Wo s received, the Wor eport.

2. T cation in India are brie ng a resume of the re shmanaswami Mudalia al conferences of Deans the facilities for med s been analysed Statewis statistics in the State nen students in medic ter discusses the rate d measures "real wa women students. Some us on in India in 1965, the approximate cost of setting up a medical college and the recommendations of the Medical Council of India on undergraduate medical curriculum is included in the Appendix to the Report.

3. The earlier Working Paper on development of modern medical education was prepared by Shri Y.S. Yegnaraman, Senior Research Officer. Shri Y.L. Ahuja, Research Officer, prepared the Working Paper on Student Wastage and Stagnation and also revised the two Working Papers for this Report. S/Shri Rukan Singh and S.B.L. Saxena, Research Investigators, provided assistance in the preparation of Working Papers/ Reports while the Charts and Map have been made by Shri G.K. Mazumdar. The Institute acknowledges the valuable guidance received in the preparation of these studies from Dr. S. Krishnaswami Rao, Professor of Public Health Administration, National Institute of Health Administration and Education.

4. The Institute also wishes to place on record their indebtedness to the Principals and Deans of various medical colleges for their active cooperation and to the members of the Steering Committee on Medical Manpower Studies for their suggestions and comments.

(P.K. DAS)
Director

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COMMUNITY HEALTH CELL
326, V Main, I Block
Koramangala
Bangalore-560034
India

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## SUMMARY OF FINDINGS

The western system of medicine was first introduced in India in the 16th century with the arrival of European missionaries in South India. By the 19th century, the modern system of medicine took firm roots in the soil.

2. The first medical school, under the name "Native Medical School" was started in Calcutta in 1824. This was converted into a medical college in 1835 and this laid the foundation of the allopathic system of medicine in India.

3. The present organisation of medical education, research and service is largely based on the recommendations of two committees, viz: the Health Survey and Development Committee (1946) under the chairmanship of Sir Joseph Bhore and the Health Survey and Development Committee (1961) under the chairmanship of Dr. A. Lakshmanswami Mudaliar. The Indian Medical Council has played no small part in the maintenance of standards in medical education.

4. At the beginning of this century there were only three medical colleges in India. This number rose to 22 by 1946 and 30 by 1950. Eleven more medical colleges were added during the First Plan period, 21 during the Second Plan period and 27 during the Third Plan period. In all there were 89 medical colleges by 1965. This does not however provide for the minimum norm of 1 medical college for at least 5 million population recommended by the Lakshmanaswami Mudaliar Committee, 1961. There are wide variations among the states with reference to this norm.

5. In 1947, only 1,983 students were admitted to various medical colleges of India. This number went up to 2,675 by 1950. The admission strength increased to 3,660, 5,874 and 10,520 by the end of the three Plan periods respectively, a phenomenal growth having taken place in the Third Plan period.

6. The admission of women students has also shown an increasing trend at the all-India level. In 1965, there were 2,523 women students admitted to various medical colleges of India. This forms about 24% of the total admission in the medical colleges.

7. The teacher-student ratio in medical colleges in 1963 was 1:8, the ratio varying from 1:3 in Delhi to 1:15 in Uttar Pradesh. In 7 out of

16 States/Union Terri...ies, even the sanctioned ratio of teachers to students is less than the target ...1:5 recommended by the Health Survey and Planning Committee (1961).

8. The out-turn of ...dical graduates went up from 959 in 1947 to 1,557 in 1950. The out-turn ...reased further to 2,743, 3,387 and 5,387 by the end of three Plan peri... respectively.

9. The out-turn of ... men students has increased from 554 in 1958 to 1,356 in 1965.

10. The rate of stu... wastage in medical colleges is 6.0%, 6.4% for men students and 5.3% ... women students.

11. 47.0% of the stu...nts qualify within the minimum prescribed time of 5 years. An additio... 41.0% qualify in 6 years and a further 6.0% in 7 years' time.

12. 43.0% of the me... students qualify in the minimum prescribed time of 5 years, an addition... 12.7% in 6 years and a further 7.9% in 7 years' time.

13. 55.0% of the wo... students qualify within 5 years, an additional 36.0% in 6 years and a ...ther 3.7% in 7 years' time.

14. Over-all "time w...tage" is 11.0%, 12.0% for men students and 9.0% for women stude...

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# CHAPTER I

## HISTORICAL DEVELOPMENT OF MODERN MEDICAL EDUCATION IN INDIA

The allopathic system of medicine owes its origin to the West and .s first introduced in India in the 16th century with the arrival of uropean missionaries. The Portuguese missions organised hospitals the European type at Calicut (Kerala), Santhome (Madras) and Goa. ey set up treatment centres near their missions and trained local men d women as dressers, medical auxiliaries and nurses. In the early ages, the missions were largely financed from external funds. Later, en the value of their services, particularly care of the sick and infirm, .s recognised, local support and subsidies increased.

2. At about the same time, the European doctors employed by the East dia Company, primarily for the purpose of providing medical attention its employees, played an important role in the introduction of modern edicine in India in a systematic manner. In the early part of the 17th ntury, Sir Thomas Roe introduced modern medicine in the court of nperor Jahangir. Other princely states also began to take interest in e western medical system. The growing popularity of European doctors tracted the attention of physicians and surgeons of the East India Com- ny and a few of them settled temporarily or permanently as private edical practitioners in India after discharge from the Company. For stance, the Fort St. George reports, and the burial records of foreigners Madras, show that Robert Cooper, who was a Company Surgeon between 57 and 1663, had settled in Madras as a private practitioner on retire- ent from the Company service. Others found employment in the courts various princely states. These pioneers of the western system came om most of the maritime nations of Europe, viz., Portugal, Holland, ance, England, etc.

### ginning of Medical Education

3. The first medical school, viz., the "Native Medical School", was rted at Calcutta in 1824 followed by another at Madras in 1835. In w of the great popularity and prestige of the Indian systems of medicine

with the rural communities, an integrated system of teaching of both modern and Indian medicine was introduced in the initial stages. The works of Charaka, Sushruta and other important Indian scholars were also taught alongside the modern allopathic system. The experiment continued for about a decade but was ultimately given up as it appeared to be neither effective nor workable. Soon afterwards, on the recommendations of a committee which was set up to consider the contents and scope of medical curricula, a decision was taken to establish the first medical college in Calcutta. The medical school at Calcutta was accordingly converted into a medical college in 1835. A medical college at Bombay was started in 1845. In 1846 a medical school was started at Hyderabad and in 1848 another was established at Indore, quickly followed by similar schools in other places. With the establishment of universities, a few of these schools were converted into colleges but the process was a gradual one. The medical schools and colleges were run by both government, and local and private bodies with or without aid from government. Students from Indian medical colleges were accepted for higher training in medical education in the United Kingdom as early as in 1845. Some of the medical colleges in India received recognition of the General Medical Council of Great Britain in 1892.

4. After the establishment of universities at Calcutta, Bombay and Madras in 1857, medical education was brought within their purview for the awards of Licentiate in Medicine and Surgery, and the Bachelor of Medicine and Bachelor of Surgery (M.B.B.S.) degree. The entrance qualification for the former course was matriculation and for the latter course, Intermediate. The M.B.B.S. degree granted by Indian Universities was recognised by the General Medical Council of Great Britain and the standards of medical curricula in India were brought in conformity with the requirements laid down by that Council for such recognition.

5. In 1926, Sir Norman Walker and Col. Nudham visited different medical institutions in the country to make a comprehensive inspection of the entire field of medical education. Sir Norman Walker later submitted a report to the Secretary of State for India in 1927. The report stated that the conditions in India had changed since the General Medical Council first recognised Indian Medical Degrees in 1892. The number of medical institutions had increased and in the absence of a central coordinating agency in India, the General Medical Council was experiencing difficulty in its operation. The report recommended the creation of a central authority with whom the General Medical Council

of Great Britain could correspond and keep liaison in order to fulfil its statutory obligations. Soon afterwards in 1930, the General Medical Council discontinued its recognition of Indian medical degrees. The decision caused hardship to the holders of Indian degrees and led to great resentment in the country. This exigency resulted in the formulation of a proposal to establish a Medical Council of India. After a great deal of spade work and the necessary legislative procedures, the Indian Medical Council Act 1933 was formulated and the Medical Council of India was formally constituted in February, 1934.

Health Survey and Development Committee, 1946

6. The Health Survey and Development Committee was appointed by the Government of India in October, 1943 to make (a) a broad survey of the present position in regard to health conditions and health organisations in British India, and (b) recommendations for future development of health services including the education and training of medical manpower. The Committee made a number of important recommendations regarding the organisation of medical services, growth of public health and medical facilities, and medical education and research in India. Some of the important recommendations of the Committee relating to medical education are indicated below:

(i) 'Having given serious consideration to the suggestion that, in the conditions now prevailing in the country, it might be desirable to provide both fully trained doctors and less elaborate type of medical men, the conclusion which the majority of us arrived at is that, having regard to the limited resources available for the training of doctors, it would be to the greater ultimate benefit of the country if these resources were concentrated on the production of only one and that of a highly trained type of physicians whom we have termed the "basic" doctor'.

(ii) The Committee suggested changes in the under-graduate curriculum which included the following:

(a) A reduction in the hours of didactic instruction in certain subjects and an emphasis on the inclusion of principles and methods which will enable the student to learn for himself, think, observe and draw conclusions;

(b) The establishment in every medical college of a department of Preventive and Social Medicine so as to give the student an insight into social health problems by contacts with home and community life;

(c) The inclusion of a year of internship after the qualifying examination, of which three months will be devoted to work in a public health unit and the remaining period in a hospital of approved standard.

(iii) The Committee recognised that the main factor which impeded the expansion of medical education was the large shortage of teaching staff. The solutions offered for meeting the shortage were (a) training medical teachers at the All-India Institute of Medical Sciences which was expected to supply a "steady stream of teaching personnel of the highest quality", (b) getting experienced teachers from foreign countries on a short-term basis, (c) training abroad at least 200 selected members of the medical profession from the various provinces of India for periods ranging from two months to two years to acquire knowledge on the improved methods of teaching, particularly in Anatomy, Physiology, Biochemistry, Pathology, Bacteriology and Pharmacology, and (d) encouraging an increasing number of younger men of the profession to acquire post-graduate qualifications in this country and later round off their education by visits abroad for periods ranging from six months to one year.

(iv) To preserve uniform standard of medical education, it was urged that the only channel for the grant of medical qualifications should be universities.

(v) In order to prevent economic barriers standing in the way of suitable persons entering the medical profession, the Committee suggested the grant of stipends of Rs. 1000/- per annum each to 50% of the entrants on the condition that such stipendiaries agreed to enter public services.

Medical Education Conference

7. A Medical Education Conference was organised by the Government of India in 1955 to assist formulation of medical education development programmes in the Second Plan. This conference made several recommendations

in respect of selection of students, entrance qualification including pre-medical studies, curriculum of medical education, examinations, full-time teaching units, etc.

8. The conference stated that the development of a common criterion for selection of students for medical colleges will have to await the reorganisation and improvement of secondary education as recommended by the Secondary Education Commission. Pending such reorganisation, the Medical Education Conference agreed that each college may continue its method of selection of students on the basis of the academic record and extra-curricular activities, together with an interview. The conference stated that record should be kept of each student regarding his academic attainment, his extra-curricular activities and any personality and aptitude factors so that such record may be reviewed periodically for the purpose of arriving ultimately at a suitable method of selection of students for medical colleges. As suggested by the Secondary Education Commission, a pre-professional course of one year would meet the requirements of a pre-medical education. It was also suggested that selection of a student for medical education might be done after the matriculation examination also and the intermediate course may be suitably modified so as to equip him better for medical education later.

9. The Conference agreed that the present methods of examinations and assessment were unsatisfactory, that written examinations required considerable modification and that great importance should be given to the day-to-day assessment of the student during his medical courses.

10. It was recommended that each medical college should have a Preventive and Social Medicine Department with full-time staff. The teaching of Preventive and Social Medicine should start from the very beginning and continue throughout the period of training including the period of internship. The functions of the Preventive and Social Medicine Department should be integrated with the teaching of the other departments along with a coordinated out-patient service. This department should have rural and urban health centres which will give the necessary facilities for rural training. A separate examination in Preventive and Social Medicine should be made part of the final M. B. B. S.

11. A compulsory course of elementary statistical training should be provided for all students in the pre-clinical period. At least one full-time unit should be provided in each department in order to bring about definite improvement in teaching and in promoting research. Full-time teachers

should be prohibited private practice and be given satisfactory emoluments. The existing teacher-student ratio in medical colleges should be increased substantially to 1:5.

12. The Medical Education Conference also recommended that a separate department of Paediatrics should be established in each medical college and at least three months should be devoted to this subject.

13. In order to reorient the student in Psychological Medicine, teachers should emphasise the psychological and sociological influence on illness.

Health Survey and Planning Committee, 1961

14. A second committee, called the Health Survey and Planning Committee was set up by the Ministry of Health under the chairmanship of Dr. A. Lakshmanaswamy Mudaliar on 12th June, 1959 to undertake a review of the developments since the publication of the Bhore Committee's report in 1946 with a view to assist in the formulation of health programmes for the country in the Third and subsequent Five Year Plans. The Committee submitted its report in 1961. It made a brief survey of the implementation of the Bhore Committee's recommendations relating to professional education over the period of 15 years since they were made. Briefly, the committee noted that:

(i) All medical schools except one had been upgraded to medical colleges.

(ii) Some of the old medical colleges which were deficient in certain respects had been improved.

(iii) 46 new medical colleges were established after 1946 compared to 15 colleges which existed before 1946. The number further rose to 61 in 1961, including the Armed Forces Medical College at Poona. The number of seats which was 1,200 in 1946 also rose to 5,900.

(iv) An All-India Institute of Medical Sciences had begun functioning since 1956. The Institute, however, was not yet in a position to produce a 'steady stream of teaching personnel' that was envisaged by the Bhore Committee.

(v) Departments of Preventive and Social Medicine had been established in almost all medical colleges.

(vi) The number of qualified teaching personnel available did not however increase proportionately to the increase in medical colleges. It was estimated that the shortage of teachers in medical colleges was of the order 2, 000 in 1961.

(vii) Facilities for post-graduate education were provided by upgrading departments in a number of medical colleges with the assistance of the Government of India.

(viii) Three new dental colleges were established and dental wings added to medical colleges.

(ix) The Central Government coordinated foreign training of medical men from all over India under the Government of India overseas scholarship scheme as well as the fellowships programmes of international organisations such as the WHO, T.C.M. (now USAID), Rockefeller Foundation, Colombo Plan, etc.

15. The salient recommendations of the Mudaliar Committee on development of medical education are set out below:

Licentiate Course:

(i) The Committee did not favour the revival of licentiate qualification in medicine. The Committee did not agree with the view that such persons are likely to settle in rural areas. It was also of the view that rural and urban areas cannot be differentiated in the matter of providing medical relief.

Under-graduate course:

(ii) The minimum age of admission to a medical college to be 17 plus on 1st October for candidates joining the regular medical course of 5 years.

(iii) Graduates in mathematics and physical sciences and natural sciences to be encouraged to seek admission to medical colleges, in addition to those who have passed pre-university examination,

provided they possess first or second class degree and their pre-university record is of a minimum standard prescribed for admission to medical colleges.

(iv) The pre-clinical course of instruction should extend for 18 months. During this course the main subjects of study and examination to be Physiology including Biophysics, Organic Chemistry and Biochemistry and Anatomy, including Histology.

(v) The period of training after the pre-clinical stage to extend to $3\frac{1}{2}$ years, the first six months being devoted to certain topics like Elementary Statistics, Introduction to Psychology and Sociology and Introduction to Medicine.

(vi) The existing departments of Preventive and Social Medicine to be strengthened.

(vii) New medical colleges to be started only with the approval of the Planning Commission and the Ministry of Health. The medical colleges, started either by a private body or the government to be affiliated to a university and the minimum standards required for starting a medical college to be strictly adhered to.

(viii) A norm of one medical college for an area with 5 million population was considered adequate.

(ix) In the interest of personal attention, annual admission to a medical college not to ordinarily exceed 100.

(x) More than one teaching hospital, properly equipped and staffed, may be utilised for under-graduate education rather than concentrating all students in one teaching hospital.

(xi) In view of the shortage of high level medical personnel, the age of retirement for teaching staff to be increased from 55 to 60 years.

(xii) All lecturers to have post-graduate qualifications in the particular subject or specialities.

(xiii) For an admission of 100 students, the teacher-student ratio inclusive of tutors to be 1:5.

Conference of Deans and Principals

16. Two conferences of Deans and Principals of medical colleges were convened by the Ministry of Health in 1960 and 1962 respectively. Besides heads of medical institutions, these conferences were attended by prominent men from Health Administration, Universities, University Grants Commission, and international agencies like the World Health Organisation (WHO) and T.C.M. (now USAID). The main object of these conferences was to provide a forum for discussing medical education by persons most intimately connected with it. The first conference held in 1960 discussed problems like (a) high cost of medical education, (b) measures for obtaining increasing number of teachers, (c) evaluation of existing curricula, (d) failure rates, (e) integration of pre-medical courses in medical colleges, etc., and made important recommendations. Particular concern was voiced on the shortage of teachers in medical colleges, especially for non-clinical subjects. In order to attract and retain post-graduate students as teachers, the Conference recommended that salary levels should be raised to attract them. In order to avoid horizontal mobility, the conference recommended adoption of uniform scales in all medical colleges.

17. The second conference was held in 1962. The following important topics were discussed: (a) Review of post-graduate medical examination facilities, (b) Post-graduate medical examinations, (c) Deficiency of teachers, (d) Award of fellowships and stipends, (e) Emigration of Indian doctors for post-graduate studies abroad, (f) Additional facilities for post-graduate medical education, (g) Proposals for Fourth Five Year Plan, (h) High cost of buildings for medical colleges, (i) Requirements and shortages of medical specialists, and (j) Control of primary health centres by a university or medical colleges for their proper management.

18. The conference had an accent on post-graduate education in its deliberations and made recommendations on standard nomenclatures and requirements of admission, criterion for selection of candidates and conduct of examinations. In order to reduce the failure rates it recommended that candidates' day-to-day performance should also be taken into account in the assessment. A stipend of Rs. 300 p.m. was also recommended to all students taking up post-graduate medical degree to attract more candidates who can fill in posts in medical institutions as teachers.

## CHAPTER II

## GROWTH OF MEDICAL COLLEGES

19. At the beginning of the present century, there were only three medical colleges in India, namely, the Grant Medical College, Bombay, Calcutta Medical College, Calcutta and Madras Medical College, Madras. The growth of medical colleges during the pre-independence period was extremely slow. During that period the scope of economic and social programmes including the provision of satisfactory medical services was limited and such programmes were accorded low priority. In 1947, i.e., at the time when India became independent, there were only 22 medical colleges in India. After independence, there has been a rapid growth of facilities in medical education. During 1947-50 as many as 8 new colleges were established. Eleven more were added during the First Plan period (1951-55), twenty-one during the Second Plan period (1956-60) and twenty-seven during the Third Plan period (1961-65). In all, there were 89 medical colleges in India in the year 1965*. The number of medical colleges established during different periods prior to and after independence is shown in Table 1.

### TABLE 1

### Number of Medical Colleges in India upto 1965

| Period | Number of new Medical Colleges | Percentage to total |
|---|---|---|
| 1 | 2 | 3 |
| Prior to 1900 | 3 | 3.4 |
| 1900-1946 | 19 | 21.3 |
| 1947-1950 | 8 | 9.0 |
| 1951-55 (First Plan) | 11 | 12.4 |
| 1956-60 (Second Plan) | 21 | 23.6 |
| 1961-65 (Third Plan) | 27 | 30.3 |
| Total | 89 | 100.0 |

* The statewise list of medical colleges functioning in 1965 is given in Appendix I.

Regional and State Distribution of Medical Colleges

20. The regional* and statewise distribution of medical colleges may now be considered. A study of variations in geographical distribution of medical education facilities helps in the planning of balanced development of medical colleges between the states and to equalise opportunities for higher education in this field. Table 2 gives the number of medical colleges in the States and their inter se ranking with reference to medical colleges per 5 million of population—a norm which has been recommended by the Health Survey and Planning Committee (1961).

21. It can be seen that the number of medical colleges per 5 million population is more than the all-India level for all the States in the North, West and South zones, which indicates that these three zones are more developed educationally in the field of medicine. The States in East and Central zones excepting for Assam and Madhya Pradesh lag behind the all-India level, the facilities in Uttar Pradesh and Bihar being particularly inadequate. It may be recalled that the Bhore Committee had suggested a norm of one medical college for every area of three million population. The Mudaliar Committee felt that keeping in view the practical difficulties for large scale expansion of facilities for medical education, it may not be possible to conform to this norm even though it may be a desirable norm to be achieved in due course of time. This Committee, therefore, recommended a norm of one medical college for every 5 million population. A study of Table 2 will reveal that even at the all-India level this norm has hardly been achieved. The States of Madhya Pradesh, Uttar Pradesh, West Bengal, Bihar and Orissa have not so far attained the target recommended by the Mudaliar Committee. This is illustrated in the attached Map of India which also shows the location of the 89 medical colleges in the country.

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* The zones followed in this study are those as adopted in 1961 census:

(a) Central Zone: Madhya Pradesh, Uttar Pradesh.

(b) Eastern Zone: Assam, Bihar, Nagaland, Orissa, West Bengal, Manipur, Tripura.

(c) Northern Zone: Jammu and Kashmir, Punjab, Rajasthan, Delhi, Himachal Pradesh.

(d) Southern Zone: Andhra Pradesh, Kerala, Madras, Mysore, Pondicherry.

(e) Western Zone: Gujarat, Maharashtra.

Repeat 1965 | 1972

## TABLE 2

### Number of Medical Colleges by Zones, States and Union Territories, 1965

| Zone/State | No. of Medical Colleges | No. of Medical Colleges per 5 million of population | Ranking |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| Central Zone | 13 | 0.55 | V |
| Madhya Pradesh | 7 | 0.97 | 13 |
| Uttar Pradesh | 6 | 0.37 | 17 |
| Eastern Zone | 15 | 0.59 | IV |
| Assam | 3 | 1.11 | 8 |
| Bihar | 4 | 0.39 | 16 |
| Orissa | 3 | 0.78 | 14 |
| West Bengal | 5 | 0.64 | 15 |
| Southern Zone | 30 | 1.20 | II |
| Andhra Pradesh | 8 | 1.02 | 12 |
| Kerala | 4 | 1.06 | 11 |
| Madras | 8 | 1.10 | 9 |
| Mysore | 9 | 1.73 | 5 |
| Pondicherry | 1 | 12.50 | 1 |
| Western Zone | 16 | 1.17 | III |
| Gujarat | 5 | 1.08 | 10 |
| Maharashtra | 10 | 1.13 | 7 |
| Goa | 1 | 7.69 | 1 |
| Northern Zone | 15 | 1.37 | I |
| Jammu and Kashmir | 1 | 1.32 | 6 |
| Punjab* | 5 | 1.08 | 10 |
| Rajasthan | 5 | 1.10 | 9 |
| Delhi | 3 | 4.50 | 3 |
| Himachal Pradesh | 1 | 3.36 | 4 |
| All-India | 89 | 0.90 | - |

* Including the present States of Punjab and Haryana.

22. It may be of interest to note that there is a tendency, for various reasons, to locate the medical colleges in large urban cities rather than spread them over in a number of districts. In as many as six States, there is more than one medical college located at the capital of the State Table 3 reveals that concentration of medical colleges is in the capitals of States and that in each of the metropolitan centres of Madras, Bombay (Maharashtra), Calcutta (West Bengal) and Delhi, there are as many as three or more medical colleges.

Repeat

TABLE 3

Medical Colleges located in the Capitals of States, 1965

| State/Union Territory | No. of Medical Colleges in the State | No. located in each Capital City |
|---|---|---|
| Assam | 3 | - |
| Andhra Pradesh | 8 | 2 |
| Bihar | 4 | 12 |
| Gujarat | 5 | 2 |
| Jammu and Kashmir | 1 | 1 |
| Kerala | 4 | 1 |
| Madhya Pradesh | 6 | 1 |
| Madras | 8 | 3 |
| Maharashtra | 10 | 4 |
| Mysore | 9 | 2 |
| Orissa | 3 | 1 |
| Punjab | 5 | - |
| Rajasthan | 5 | 1 |
| Uttar Pradesh | 7 | 1 |
| West Bengal | 5 | 4 |
| Delhi | 3 | 3 |
| Goa | 1 | 1 |
| Himachal Pradesh | 1 | 1 |
| Pondicherry | 1 | 1 |

## CHAPTER III

## STUDENT ADMISSIONS TO MEDICAL COLLEGES

23. This chapter deals with the admission of students to medical colleges for the M.B.B.S. Course at the all-India, zonal and state levels*. Figures relating to student admissions in medical colleges, during the post-independence period, are given in Table 4. The indices of admissions and annual growth rates are also given in the same table. It would appear that there has been a steady increase in the admission of students during the period under consideration with some variations in the rate of growth, during the earlier years. By the end of each of the three Plan periods, the admission of students increased by 47%, 136% and 323% respectively in relation to the admissions at beginning of First Five Year Plan. The Third Plan period saw a major spurt in the growth rate. This phenomenal growth during the Third Plan period has been on account of (i) increase in actual admissions in medical colleges already in existence, and (ii) the addition of 27 new medical colleges in the various States.

### Admission in Medical Colleges by Zones and States

24. Student admissions to medical colleges by Zones, States and Union Territories, for the period 1956-65 are given in Table 5. The indices of admission have also been calculated with base 1956=100 and are given in brackets. It may be noted that at the zonal level, the growth in the admission of students was more rapid in the north and southern zones. In the central, eastern and western zones, the growth has been less than the all-India level. At the state level, admission has followed an increasing trend in almost all the states. In the states of Madras, Maharashtra, Jammu and Kashmir and Punjab as well as in the Union Territory of Delhi, the rate of increase in admissions has been below the national average; but, as shown in Table 2 earlier, these states are already above the all-India level in terms of medical colleges per population strength. In cases of Uttar Pradesh and West Bengal, the rate of growth is low despite the fact that the present facilities are also below par with the national average.

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* The figures on student admissions have been obtained from the Directorate General of Health Services, Govt. of India, New Delhi.

GROWTH IN NUMBER OF MEDICAL COLLEGES, STUDENT ADMISSIONS AND OUT-TURN OF M.B.B.S. DOCTORS, 1947-65

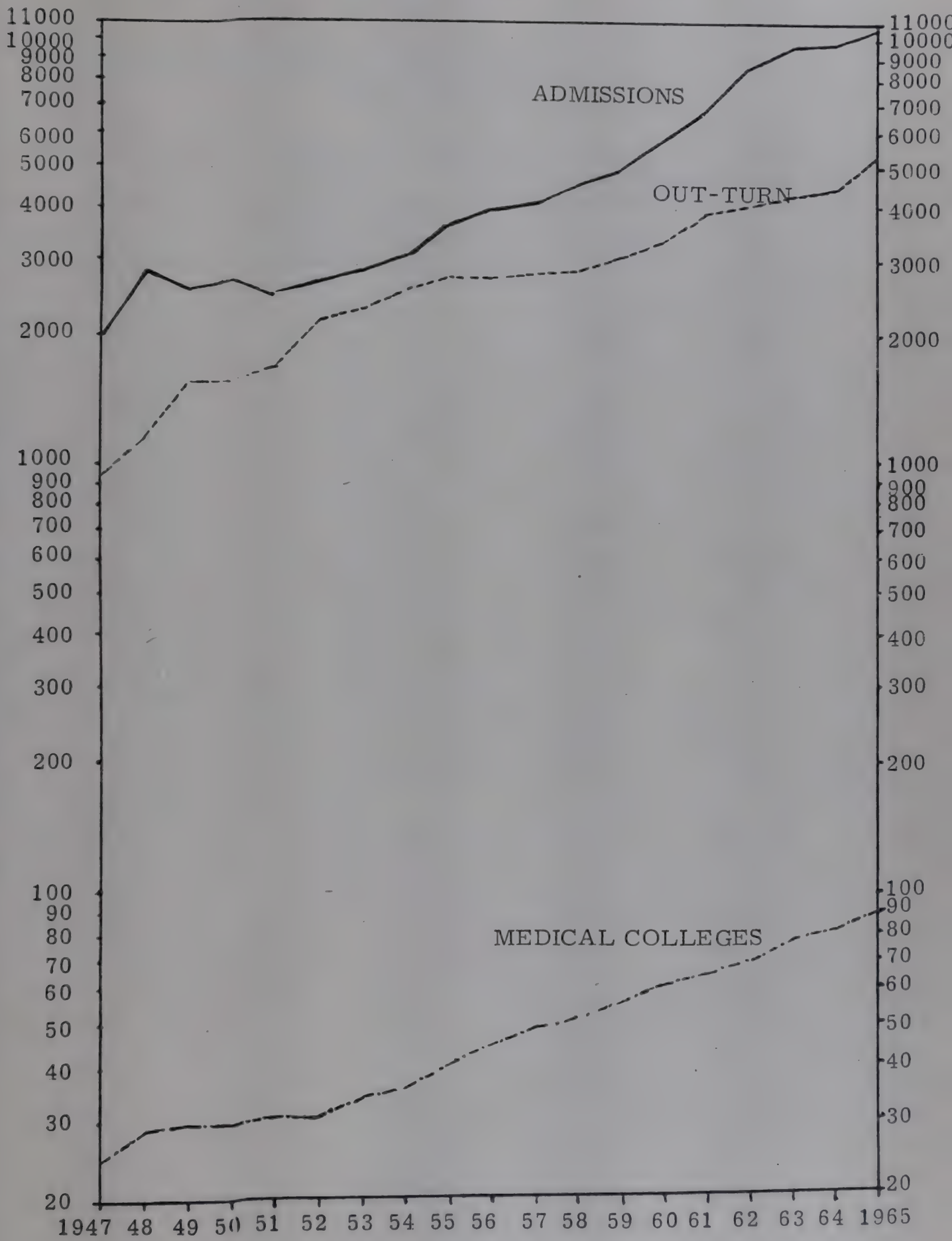

TABLE 4

Student Admissions in Medical Colleges for the M.B.B.S. Course, 1947-65

| Year | Admissions | Index of Admissions (1951=100) | Annual Growth Rate (as a percentage over previous year) |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1947 | 1,983 | 80 | - |
| 1948 | 2,811 | 113 | 42 |
| 1949 | 2,609 | 105 | -7 |
| 1950 | 2,675 | 107 | 3 |
| 1951 | 2,489 | 100 | -7 |
| 1952 | 2,691 | 108 | 8 |
| 1953 | 2,846 | 114 | 6 |
| 1954 | 3,087 | 124 | 8 |
| 1955 | 3,660 | 147 | 19 |
| 1956 | 3,958 | 159 | 8 |
| 1957 | 4,083 | 164 | 3 |
| 1958 | 4,554 | 183 | 12 |
| 1959 | 4,904 | 197 | 10 |
| 1960 | 5,874 | 236 | 20 |
| 1961 | 6,846 | 275 | 17 |
| 1962 | 7,719 | 310 | 13 |
| 1963 | 9,697 | 390 | 27 |
| 1964 | 9,897 | 398 | 2 |
| 1965 | 10,520 | 423 | 6 |

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TABLE

Student Admissions in Medical Colleges for Union Territories,

| Zone/State | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| Central Zone | 608(100) | 612(101) | 690(114) | 695(114) |
| Madhya Pradesh | 275(100) | 287(104) | 375(136) | 346(126) |
| Uttar Pradesh | 333(100) | 325(98) | 315(95) | 349(105) |
| Eastern Zone | 994(100) | 911(92) | 975(98) | 1,062(107) |
| Assam | 100(100) | 100(100) | 100(100) | 110(110) |
| Bihar | 212(100) | 214(101) | 222(105) | 246(116) |
| Orissa | 62(100) | 75(121) | 100(161) | 210(339) |
| West Bengal | 620(100) | 522(84) | 553(89) | 496(80) |
| Southern Zone | 1,164(100) | 1,378(119) | 1,619(139) | 1,707(147) |
| Andhra Pradesh | 380(100) | 430(113) | 565(149) | 591(156) |
| Kerala | 104(100) | 154(148) | 179(172) | 231(222) |
| Madras | 365(100) | 395(108) | 473(130) | 456(125) |
| Mysore | 295(100) | 358(121) | 352(119) | 382(129) |
| Pondicherry | 20(100) | 50(250) | 50(250) | 47(235) |
| Western Zone | 785(100) | 747(95) | 758(97) | 787(100) |
| Gujarat | 220(100) | 220(100) | 220(100) | 220(100) |
| Maharashtra | 565(100) | 527(93) | 538(95) | 567(100) |
| Goa | - | - | - | - |
| Northern Zone | 407(100) | 426(105) | 512(126) | 653(130) |
| Jammu and Kashmir | - | - | - | 67(100) |
| Punjab | 212(100) | 210(99) | 233(110) | 225(106) |
| Rajasthan | 85(100) | 85(100) | 100(118) | 172(202) |
| Delhi | 110(100) | 131(119) | 179(163) | 189(172) |
| All-India | 3,958(100) | 4,083(103) | 4,554(115) | 4,904(124) |

Note: Figures in brackets are the indices of admission with base

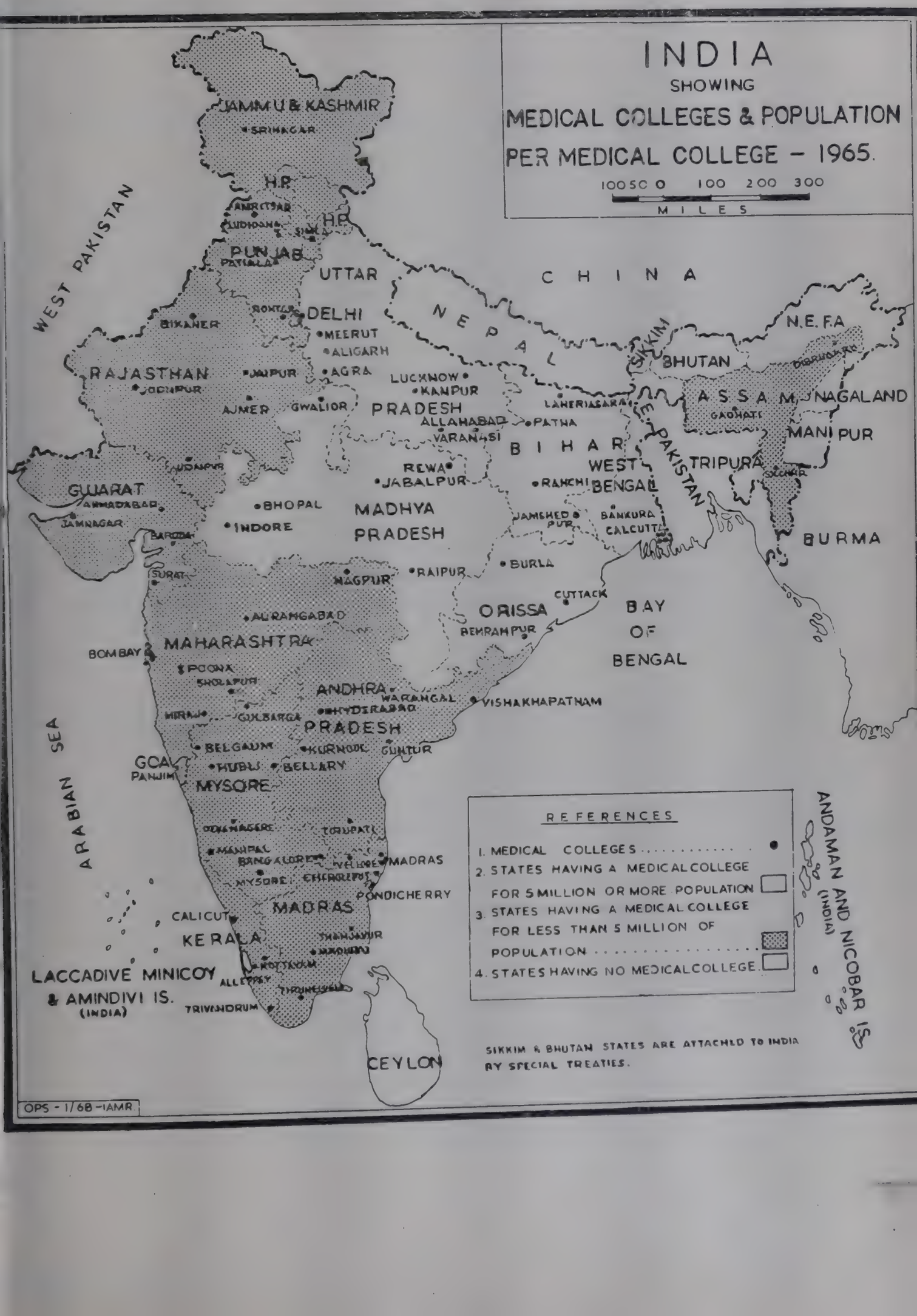
5

the M. B. B. S. Course by Zone, State and
1956-65

| 1960 | 1961 | 1962 | 1963 | 1964 | 1965 |
|---|---|---|---|---|---|
| 6 | 7 | 8 | 9 | 10 | 11 |
| 810(133) | 995(164) | 1,087(179) | 1,407(231) | 1,448(238) | 1,413(232) |
| 373(136) | 503(183) | 550(200) | 724(263) | 737(268) | 716(260) |
| 437(131) | 492(148) | 537(161) | 683(205) | 711(214) | 697(209) |
| 1,362(137) | 1,582(159) | 1,671(168) | 1,857(187) | 1,904(192) | 1,978(199) |
| 210(210) | 210(210) | 209(209) | 252(252) | 241(241) | 280(280) |
| 450(212) | 496(234) | 547(258) | 573(270) | 574(271) | 591(279) |
| 200(323) | 340(548) | 369(595) | 502(810) | 500(807) | 502(810) |
| 502(81) | 536(86) | 546(88) | 530(85) | 589(95) | 605(98) |
| 1,965(169) | 2,211(190) | 2,748(236) | 3,232(278) | 3,120(268) | 3,569(307) |
| 775(204) | 856(225) | 1,047(276) | 826(217) | 831(219) | 1,001(263) |
| 305(293) | 350(337) | 343(330) | 484(465) | 502(483) | 500(481) |
| 466(128) | 498(136) | 653(179) | 661(181) | 622(170) | 660(181) |
| 372(126) | 463(157) | 661(224) | 1,215(412) | 1,096(372) | 1,343(455) |
| 47(235) | 44(220) | 44(220) | 46(230) | 69(345) | 65(325) |
| 936(119) | 984(125) | 1,243(158) | 1,836(234) | 1,992(254) | 2,044(260) |
| 280(127) | 304(138) | 354(161) | 535(243) | 635(289) | 641(291) |
| 656(116) | 680(120) | 889(157) | 1,238(219) | 1,294(229) | 1,338(237) |
| - | - | - | 63(100) | 63(100) | 65(103) |
| 801(197) | 1,074(264) | 970(238) | 1,365(335) | 1,433(352) | 1,576(372) |
| 111(166) | 227(339) | 85(127) | 192(287) | 85(127) | 97(145) |
| 284(134) | 354(167) | 352(166) | 452(213) | 506(239) | 499(235) |
| 206(242) | 254(299) | 283(333) | 446(524) | 567(667) | 646(760) |
| 200(182) | 239(217) | 250(227) | 275(250) | 275(250) | 274(249) |
| 5,874(148) | 6,846(173) | 7,719(195) | 9,697(245) | 9,897(250) | 10,500(266) |

1956=100.

STUDENT ADMISSIONS IN MEDICAL COLLEGES BY STATE, 1985


INDIA
SHOWING
MEDICAL COLLEGES & POPULATION
PER MEDICAL COLLEGE – 1965.
100 50 0 100 200 300
MILES
JAMMU & KASHMIR
SRINAGAR
H.P.
AMRITSAR
LUDHIANA
SIMLA
PUNJAB
PATIALA
UTTAR
DELHI
ROHTAK
BIKANER
MEERUT
ALIGARH
RAJASTHAN
JAIPUR
AGRA
JODHPUR
AJMER
GWALIOR
LUCKNOW
KANPUR
PRADESH
ALLAHABAD
VARANASI
PATNA
REWA
JABALPUR
BIHAR
RANCHI
WEST
BENGAL
BANKURA
CALCUTTA
JAMSHEDPUR
BHOPAL
INDORE
MADHYA
PRADESH
BARODA
SURAT
NAGPUR
RAIPUR
BURLA
CUTTACK
ORISSA
BERHAMPUR
AURANGABAD
MAHARASHTRA
BOMBAY
POONA
SHOLAPUR
MIRAJ
GULBARGA
ANDHRA
WARANGAL
HYDERABAD
VISHAKHAPATNAM
PRADESH
BELGAUM
KURNOOL
GUNTUR
HUBLI
BELLARY
GOA
PANJIM
MYSORE
BANGALORE
MADRAS
VELLORE
MYSORE
CHERGLEPUT
PONDICHERRY
CALICUT
KERALA
MADRAS
THANJAVUR
TRICHINOPOLY
KOTTAYAM
ALLEPPEY
TIRUNELVELI
TRIVANDRUM
LACCADIVE MINICOY
& AMINDIVI IS.
(INDIA)
CEYLON
ARABIAN SEA
BAY
OF
BENGAL
WEST PAKISTAN
CHINA
NEPAL
SIKKIM
BHUTAN
N.E.F.A.
DIBRUGARH
ASSAM
NAGALAND
GAUHATI
MANIPUR
TRIPURA
SILCHAR
EAST PAKISTAN
BURMA
ANDAMAN AND NICOBAR IS.
(INDIA)
REFERENCES
1. MEDICAL COLLEGES
2. STATES HAVING A MEDICAL COLLEGE FOR 5 MILLION OR MORE POPULATION
3. STATES HAVING A MEDICAL COLLEGE FOR LESS THAN 5 MILLION OF POPULATION
4. STATES HAVING NO MEDICAL COLLEGE
SIKKIM & BHUTAN STATES ARE ATTACHED TO INDIA BY SPECIAL TREATIES.
OPS - 1/68 - IAMR

Admissions to Medical Colleges per Million Population

25. In order to study the distribution of student admission rates with population distribution, it may be useful to consider the facilities for medical education with reference to the population of an area. This relationship is shown in Table 6. The South, West and North zones have admission of students per million population more than the all-India level whereas the central and east zones are below the all-India level. Statewise, it may be noted that there are 7 states with less students admitted for medical education in relation to population than the all-India average. These include the States of Assam, Madhya Pradesh, Madras and Punjab in which, it was earlier seen, that the number of medical colleges per population was more than the national level. The States which are yet to come up to this level, both in terms of medical colleges and of admission capacity, are Bihar, Uttar Pradesh and West Bengal. In other words, this would mean that in the former states, there is scope for increasing the admission capacity of existing medical colleges while in the latter states, the need is for setting up more medical colleges. The city of Delhi is much above the all-India level which may be due to the reason that there is a concentration of medical colleges in this metropolitan centre.

Admissions per 1,000 Students passing Intermediate/ Pre-University Examination with Science Subjects

26. The admissions in medical colleges for the M. B. B. S. Course per 1,000 students passing Intermediate/Pre-University Examination with science subjects are given by zones in Table 7. This relationship is being studied to bring out variations in the supply of students to medical colleges from different areas of the country. A higher ratio, such as the one existing in the northern zone, indicates that a smaller number of students are taking up studies in medical colleges from the body of students eligible to enter such colleges, compared to a lower ratio existing in the central zone, for example. It might also mean that, in these zones, the expansion of general education facilities at the Intermediate/PUC level has not kept pace with the development of medical education facilities. It may be added here that it would have been more appropriate to compare the number of students passing Intermediate/Pre-University Examination with biology subjects. Since that figure is not available, the next best course has been adopted in Table 7.

TABLE 6

Admission in Medical Colleges in the M.B.B.S. Course per Million Population, 1965

| Zone/State | Admission per million Population | Rank |
|---|---|---|
| Central Zone | 12 | IV |
| Madhya Pradesh | 20 | 10 |
| Uttar Pradesh | 9 | 14 |
| Eastern Zone | 16 | III |
| Assam | 21 | 9 |
| Bihar | 12 | 13 |
| Orissa | 26 | 8 |
| West Bengal | 15 | 12 |
| Southern Zone | 30 | I |
| Andhra Pradesh | 26 | 8 |
| Kerala | 27 | 7 |
| Madras | 18 | 11 |
| Mysore | 52 | 4 |
| Pondicherry | 163 | 1 |
| Western Zone | 30 | I |
| Gujarat | 28 | 6 |
| Maharashtra | 30 | 5 |
| Goa | 100 | 2 |
| Northern Zone | 28 | II |
| Jammu and Kashmir | 26 | 8 |
| Punjab | 21 | 9 |
| Rajasthan | 28 | 6 |
| Delhi | 84 | 3 |
| All-India | 22 | - |

## TABLE 7

Admission to Medical Colleges per 1,000 Students passing Intermediate/Pre-University Examination with Science Subjects, 1965

| Zone/State | Number per 1,000 Students | Rank |
|---|---|---|
| Central Zone | 62 | V |
| Madhya Pradesh | 721 | 1 |
| Uttar Pradesh | 32 | 15 |
| Eastern Zone | 107 | IV |
| Assam | 118 | 8 |
| Bihar | 84 | 13 |
| Orissa | 181 | 7 |
| West Bengal | 95 | 11 |
| Southern Zone | 167 | II |
| Andhra Pradesh | 376 | 4 |
| Kerala | 110 | 10 |
| Madras | 90 | 12 |
| Mysore | 197 | 6 |
| Western Zone | 150 | III |
| Gujarat | 397 | 2 |
| Maharashtra | 112 | 9 |
| Northern Zone | 280 | I |
| Jammu and Kashmir | 80 | 14 |
| Punjab | 383 | 3 |
| Rajasthan | 223 | 5 |
| All-India | 129 | - |

OP 02199
ME-100

COMMUNITY HEALTH CELL
326, V Main, I Block
Koramangala
Bangalore-560034
India

## Admissions of Women Students in Medical Colleges

27. The number of women students admitted to medical colleges is set out in Table 8. The percentage of their admissions to total admission is given in brackets in the same table. It would appear that the total admissions of women students on the whole has shown an increasing trend at the all-India, Zonal and State levels. As regards the percentage of women students to total admissions, it has been more or less static throughout in various zones/states. The Union Territory of Delhi has got the highest percentage (50-60%) of women students as compared to the total admissions. In a country like India, where women particularly those residing in rural areas do not feel free to consult men-doctors, the increasing enrolment of women students in medical colleges is a healthy trend. Moreover, women doctors have a major role to play in health programmes like family planning, child welfare, etc. Finally, the percentage of qualified doctors who are active is likely to be lower for women doctors compared to men-doctors due to the fact that many in the former category withdraw from the active list after marriage. This fact has a bearing on the need for improving the admission and outturn of women doctors in India.

## Teacher-Student Ratio in Medical Colleges

28. In a medical college, it is essential to have sufficient number of well-qualified and experienced teachers for imparting training to under-graduate students and for guiding post-graduate work. The Medical Council has laid down the minimum qualifications required for teaching personnel in medical colleges. While the qualitative aspect of teaching would require an intensive study, it may be relevant to indicate, in quantitative terms, the existing position of teachers in medical colleges in relation to the student enrolment. A Medical Education Conference organised by the Government of India in 1955 had recommended a teacher-student ratio of 1 : 5 for the M. B. B.S. Courses. The Health Survey and Planning Committee (1961) reiterated this ratio as a minimum target to be aimed at. It would, however, be seen from Table 9 that the actual teacher-student ratio in medical colleges in 1963

was only 1 : 8, the ratio varying from 1 : 3 in Delhi to 1 : 15 in Uttar Pradesh. In 7 out of 16 States/Union Territories, even the sanctioned ratio of teachers to students is less than the target recommended by Mudaliar Committee. Zonewise, it is only the northern zone including all its States which has a sanctioned teacher-student ratio of 1 : 5 or better.

TABLE

Admissions of Women Students and Percentage in India,

| Zone/State | 1958 | 1959 | 1960 |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| Central Zone | 166(24.1%) | 147(21.2%) | 205(25.3%) |
| Madhya Pradesh | 99(26.4%) | 76(22.0%) | 111(29.8%) |
| Uttar Pradesh | 67(21.3%) | 71(20.3%) | 94(21.5%) |
| Eastern Zone | 163(16.7%) | 197(18.5%) | 273(20.0%) |
| Assam | 13(13.0%) | 11(10.0%) | 19(9.0%) |
| Bihar | 41(18.5%) | 47(19.1%) | 98(21.8%) |
| Orissa | 35(35.0%) | 52(24.8%) | 52(26.0%) |
| West Bengal | 74(13.4%) | 87(17.5%) | 104(20.7%) |
| Southern Zone | 359(22.2%) | 387(22.7%) | 478(24.3%) |
| Andhra Pradesh | 123(21.8%) | 138(23.4%) | 166(21.4%) |
| Kerala | 60(33.5%) | 62(26.8%) | 92(30.2%) |
| Madras | 117(24.7%) | 117(25.6%) | 147(31.5%) |
| Mysore | 51(14.5%) | 60(15.7%) | 62(16.7%) |
| Pondicherry | 8(16.0%) | 10(21.3%) | 11(23.4%) |
| Western Zone | 236(31.1%) | 262(33.3%) | 290(31.0%) |
| Gujarat | 54(24.5%) | 64(29.1%) | 78(27.9%) |
| Maharashtra | 182(33.8%) | 198(34.9%) | 212(32.3%) |
| Goa | - | - | - |
| Northern Zone | 193(37.7%) | 205(31.4%) | 241(30.1%) |
| Jammu and Kashmir | - | 17(25.4%) | 33(29.7%) |
| Punjab | 62(26.6%) | 58(25.8%) | 70(24.6%) |
| Rajasthan | 30(30.0%) | 35(20.3%) | 45(21.8%) |
| Delhi | 101(56.4%) | 95(50.3%) | 93(46.5%) |
| All-India | 1,117(24.5%) | 1,198(24.4%) | 1,487(25.3%) |

Note: Percentages of women students to total admissions have

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to total admissions in the M.B.B.S. Course
1958-65

| 1961 | 1962 | 1963 | 1964 | 1965 |
|---|---|---|---|---|
| 5 | 6 | 7 | 8 | 9 |
| 211(21.2%) | 259(23.8%) | 318(22.6%) | 345(23.8%) | 318(22.5%) |
| 111(22.1%) | 141(25.6%) | 188(26.0%) | 211(28.6%) | 191(26.7%) |
| 100(20.3%) | 118(22.0%) | 130(19.0%) | 134(18.8%) | 127(18.2%) |
| 326(20.6%) | 319(19.1%) | 356(19.2%) | 340(17.9%) | 395(20.0%) |
| 22(10.5%) | 23(11.0%) | 30(11.9%) | 25(10.4%) | 62(22.1%) |
| 88(17.7%) | 94(17.2%) | 112(19.5%) | 106(18.5%) | 109(18.4%) |
| 71(20.9%) | 68(18.4%) | 100(19.9%) | 63(12.6%) | 68(13.5%) |
| 145(27.1%) | 134(24.5%) | 114(21.5%) | 146(24.8%) | 156(25.8%) |
| 512(23.2%) | 649(23.6%) | 777(24.0%) | 830(26.6%) | 746(20.9%) |
| 192(22.4%) | 247(23.6%) | 241(29.2%) | 240(28.9%) | 261(26.1%) |
| 84(24.0%) | 89(25.9%) | 132(27.3%) | 141(28.1%) | 126(25.2%) |
| 155(31.1%) | 169(25.8%) | 213(32.2%) | 250(40.2%) | 154(23.3%) |
| 72(15.6%) | 131(19.8%) | 174(14.3%) | 183(16.7%) | 194(14.4%) |
| 9(20.5%) | 13(29.5%) | 17(37.0%) | 16(23.2%) | 11(16.9%) |
| 305(31.0%) | 405(32.6%) | 564(30.7%) | 655(32.9%) | 629(30.8%) |
| 90(29.6%) | 119(33.6%) | 180(33.6%) | 209(32.9%) | 175(27.3%) |
| 215(31.6%) | 286(32.7%) | 368(29.7%) | 430(33.2%) | 435(32.5%) |
| - | - | 16(25.4%) | 16(25.4%) | 19(29.2%) |
| 316(29.4%) | 295(30.4%) | 390(28.6%) | 437(30.5%) | 435(28.7%) |
| 48(21.1%) | 19(22.4%) | 45(23.4%) | 28(32.9%) | 34(35.1%) |
| 83(23.4%) | 86(24.4%) | 103(22.7%) | 120(23.7%) | 120(24.0%) |
| 58(22.8%) | 60(21.2%) | 97(21.7%) | 118(20.8%) | 126(19.5%) |
| 127(57.1%) | 130(52.0%) | 145(52.7%) | 171(62.2%) | 155(56.6%) |
| 1,670(24.4%) | 1,927(25.0%) | 2,405(24.8%) | 2,607(26.3%) | 2,523(24.0%) |

been shown in brackets.

TABLE 9

Teacher-Student Ratio in Medical Colleges

| Zone/State | Enrolment* (1963) | Teaching Staff as on 1.2.64 | | Teacher-Student Ratio | |
|---|---|---|---|---|---|
| | | Sanctioned | Actual | Sanctioned | Actual |
| 1 | 2 | 3 | 4 | 5 | 6 |
| Central Zone | 7,526 | 817 | 557 | 1:9 | 1:14 |
| Madhya Pradesh | 1,017 | 191 | 124 | 1:5 | 1:8 |
| Uttar Pradesh | 6,509 | 626 | 433 | 1:10 | 1:15 |
| Eastern Zone | 7,776 | 1,337 | 1,088 | 1:6 | 1:7 |
| Assam | 879 | 233 | 184 | 1:4 | 1:5 |
| Bihar | 2,059 | 314 | 263 | 1:7 | 1:8 |
| Orissa | 1,470 | 278 | 181 | 1:5 | 1:8 |
| West Bengal | 3,368 | 512 | 460 | 1:7 | 1:7 |
| Southern Zone | 15,414 | 2,695 | 2,244 | 1:6 | 1:7 |
| Andhra Pradesh | 5,962 | 875 | 789 | 1:7 | 1:8 |
| Kerala | 2,085 | 373 | 302 | 1:6 | 1:7 |
| Madras** | 4,457 | 877 | 734 | 1:5 | 1:6 |
| Mysore | 2,910 | 570 | 419 | 1:5 | 1:7 |
| Western Zone | 8,637 | 1,180 | 944 | 1:7 | 1:9 |
| Gujarat | 2,784 | 309 | 221 | 1:9 | 1:13 |
| Maharashtra† | 5,853 | 871 | 723 | 1:7 | 1:8 |
| Northern Zone | 5,102 | 1,338 | 912 | 1:4 | 1:6 |
| Jammu and Kashmir | 635 | 136 | 87 | 1:5 | 1:7 |
| Punjab | 1,964 | 474 | 299 | 1:4 | 1:7 |
| Rajasthan | 1,469 | 326 | 211 | 1:5 | 1:7 |
| Delhi | 1,034 | 402 | 315 | 1:3 | 1:3 |
| All-India | 44,455 | 7,367 | 5,745 | 1:6 | 1:8 |

* Enrolment refers to the number of students on the rolls in all the years at the specific point of time.

** Includes Pondicherry.

† Includes Goa.

Sources: (i) Enrolment - University Development in India, 1963-64, University Grants Commission.

(ii) Teachers - Swasthya Samachar, November 1964, Central Bureau of Health Intelligence, Ministry of Health, Government of India.

## CHAPTER IV

## OUTTURN OF M.B.B.S. DOCTORS

29. This chapter deals with the out-turn of M.B.B.S. doctors from medical colleges for the period 1947-65. The out-turn figures together with the indices of out-turn and annual growth rates are given in Table 10. It can be seen that the out-turn of M.B.B.S. doctors has shown an increasing trend since 1947. During the three Plan periods it increased by 62%, 100% and 218% in relation to the out-turn at the beginning of the First Five Year Plan. It would nevertheless be interesting to note that the target of an annual output of 4,000 - 4,500 doctors, which was recommended by the Bhore Committee to be achieved by the end of 1956, has actually been realised about 8 years later.

### TABLE 10

### Outturn of M.B.B.S. Doctors in India, 1947-65

| Year | Outturn of M.B.B.S. Doctors | Index of Outturn (1951=100) | Annual Growth Rate |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1947 | 959 | 57 | - |
| 1948 | 1,170 | 69 | 22 |
| 1949 | 1,550 | 91 | 32 |
| 1950 | 1,557 | 92 | 0.5 |
| 1951 | 1,695 | 100 | 9 |
| 1952 | 2,164 | 128 | 28 |
| 1953 | 2,299 | 136 | 6 |
| 1954 | 2,582 | 152 | 12 |
| 1955 | 2,743 | 162 | 6 |
| 1956 | 2,732 | 161 | -0.4 |
| 1957 | 2,802 | 165 | 3 |
| 1958 | 2,859 | 169 | 2 |
| 1959 | 3,083 | 182 | 8 |
| 1960 | 3,387 | 200 | 10 |
| 1961 | 3,900 | 230 | 15 |
| 1962 | 3,946 | 233 | 1 |
| 1963 | 4,289 | 253 | 9 |
| 1964 | 4,452 | 263 | 4 |
| 1965 | 5,387 | 318 | 21 |

Source: Directorate General of Health Services, New Delhi.

Out-turn of M.B.B.S. Doctors by Zones and States

30. The out-turn of M.B.B.S. doctors by zones and states is given in Table 11 for the period 1956-65. At the all-India level, the out-turn of M.B.B.S. doctors has been doubled during the decade under review. It is interesting to note that at the zonal and state levels, no clear trend was noticed. For example, West Bengal shows a decreasing trend during 1959-63 and a marginal increase during 1964-65. The States of Punjab, Rajasthan, Madhya Pradesh, Uttar Pradesh, Orissa, Gujarat, Andhra Pradesh, Kerala and Mysore had the growth in the out-turn more than the national level during the Second Plan period. At the end of Third Five Year Plan, the growth in the East zone including its states was very much higher than the national level whereas the South and North Zones came up to the national level.

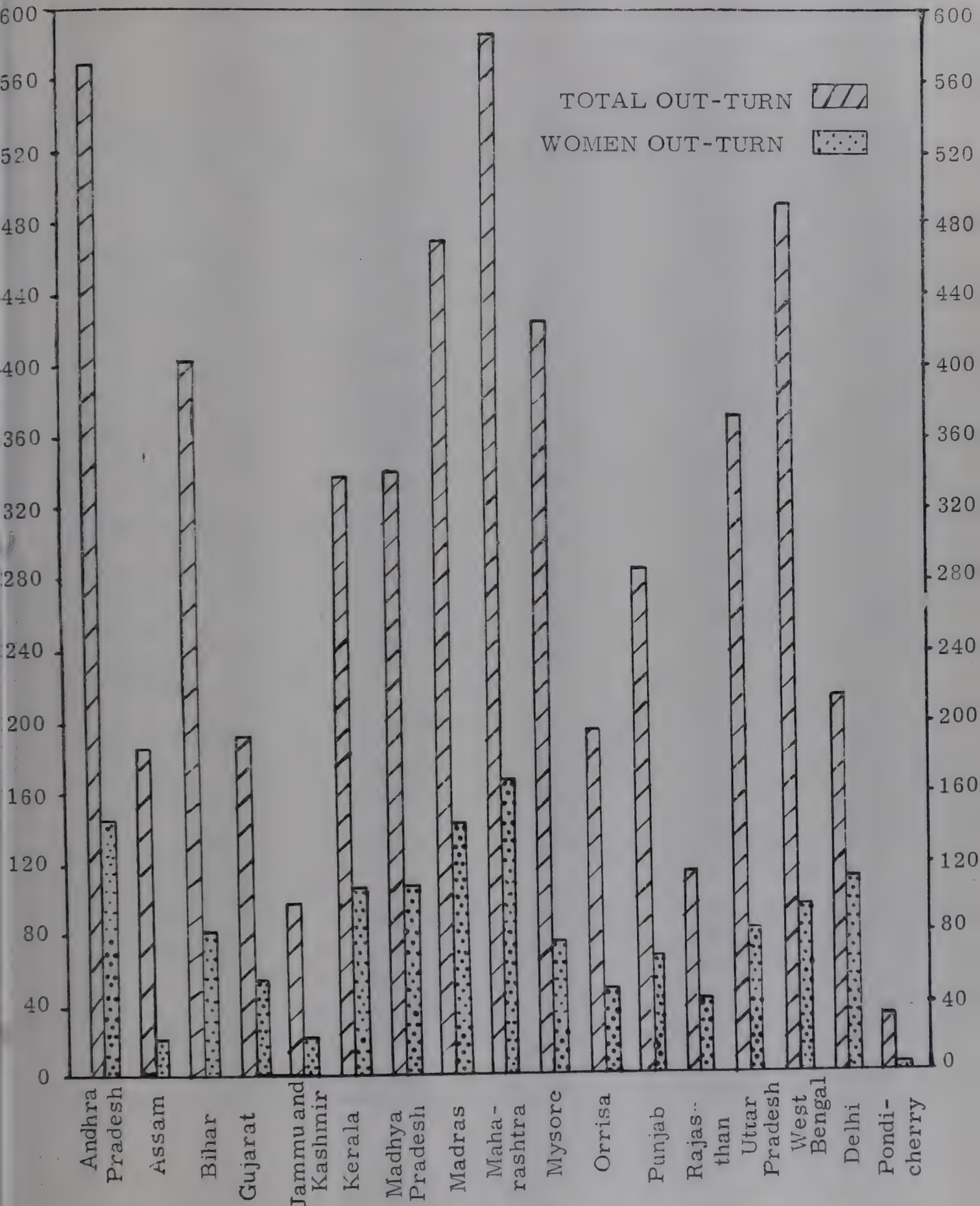
Out-turn of M.B.B.S. Doctors per Million Population

31. The out-turn of M.B.B.S. doctors per million population provides a measure of flow of doctors for medical services though in the context of high mobility among this manpower group, a statewise comparison is beset with certain valid limitations. It has been worked out for 1965 at zonal and state levels in Table 12. The south and west zones have their out-turn above the all-India level. The out-turn rate in Uttar Pradesh is about half that at the all-India level, whereas the out-turn of M.B.B.S. doctors for the metropolitan centre of Delhi is about six times that at the all-India level.

Out-turn of Women Doctors

32. Table 13 presents the out-turn of women doctors along with the percentage of women doctors outturn to total out-turn. At the all-India level the out-turn of women doctors has shown an increasing trend and is over 25% of the total outturn of doctors in 1965. It has more than doubled during the period 1958-65. The proportion of women doctors to total out-turn has also shown an increasing trend at the national level and in the states of Madhya Pradesh, Andhra Pradesh, Kerala, Madra Maharashtra, Mysore, Gujarat and the Union Territory of Delhi. In other states, the progress has been steady. As pointed out earlier in connection with the admission of women students, it is necessary to increase the out-turn of women doctors so as to meet the increasing demand of women doctors for certain types of health programmes in which men doctors cannc be placed.

## OUT-TURN OF M. B. B. S. DOCTORS BY STATES, 1965



TABLE

Out-turn of M. B. B. S. Doctors

| Zone/State | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| Central Zone | 385(100) | 393(102) | 395(103) | 368(96) |
| Madhya Pradesh | 142(100) | 127(89) | 121(85) | 121(85) |
| Uttar Pradesh | 243(100) | 266(109) | 274(113) | 247(102) |
| Eastern Zone | 955(100) | 970(102) | 971(102) | 964(101) |
| Assam | 80(100) | 90(113) | 77(96) | 85(106) |
| Bihar | 184(100) | 146(79) | 130(71) | 172(93) |
| Orissa | 49(100) | 45(92) | 67(137) | 69(141) |
| West Bengal | 642(100) | 689(107) | 697(109) | 638(99) |
| Southern Zone | 664(100) | 635(96) | 691(104) | 837(126) |
| Andhra Pradesh | 212(100) | 202(95) | 225(106) | 246(116) |
| Kerala | 46(100) | 54(117) | 81(176) | 90(196) |
| Madras | 334(100) | 348(104) | 320(96) | 324(97) |
| Mysore | 72(100) | 31(43) | 65(90) | 177(246) |
| Pondicherry | - | - | - | - |
| Western Zone | 522(100) | 575(110) | 550(105) | 629(121) |
| Gujarat | 99(100) | 115(116) | 82(83) | 149(151) |
| Maharashtra | 423(100) | 460(109) | 468(111) | 480(113) |
| Northern Zone | 206(100) | 229(111) | 252(122) | 285(138) |
| Jammu and Kashmir | - | - | - | - |
| Punjab | 100(100) | 98(98) | 144(144) | 178(178) |
| Rajasthan | 75(100) | 80(107) | 68(91) | 68(91) |
| Delhi | 31(100) | 57(165) | 40(129) | 39(126) |
| All-India | 2, 732(100) | 2, 802(103) | 2, 859(105) | 3, 083(113) |

Note: Figures in brackets are the indices of out-turn.

11

by Zones and States, 1956-65

| 1960 | 1961 | 1962 | 1963 | 1964 | 1965 |
|---|---|---|---|---|---|
| 6 | 7 | 8 | 9 | 10 | 11 |
| 537(139) | 600(156) | 626(163) | 712(185) | 652(169) | 715(186) |
| 221(156) | 248(175) | 300(211) | 389(274) | 310(218) | 343(242) |
| 316(130) | 352(145) | 326(134) | 323(133) | 342(141) | 372(153) |
| 858(90) | 892(93) | 916(96) | 860(90) | 949(99) | 1,282(134) |
| 46(58) | 102(128) | 59(74) | 185(106) | 104(130) | 188(235) |
| 218(118) | 201(109) | 247(134) | 226(123) | 217(118) | 405(220) |
| 57(104) | 68(139) | 98(200) | 72(147) | 134(273) | 194(396) |
| 543(85) | 521(81) | 512(80) | 477(74) | 494(77) | 495(77) |
| 927(140) | 1,151(173) | 1,257(189) | 1,401(211) | 1,498(226) | 1,841(277) |
| 325(153) | 416(196) | 388(183) | 391(184) | 436(206) | 570(269) |
| 88(191) | 96(209) | 120(261) | 209(454) | 193(420) | 341(741) |
| 287(86) | 317(95) | 417(125) | 413(124) | 371(111) | 473(142) |
| 227(315) | 318(442) | 307(426) | 355(493) | 457(635) | 426(592) |
| - | 4(100) | 25(625) | 33(825) | 41(1,025) | 31(775) |
| 747(143) | 833(160) | 724(139) | 780(149) | 720(138) | 779(149) |
| 238(240) | 231(233) | 190(192) | 251(254) | 156(158) | 192(194) |
| 509(120) | 602(142) | 534(126) | 529(125) | 564(133) | 587(139) |
| 318(154) | 424(206) | 423(205) | 536(260) | 633(307) | 770(374) |
| - | - | - | - | 46(100) | 75(163) |
| 187(187) | 199(199) | 214(214) | 270(270) | 238(238) | 285(285) |
| 86(115) | 110(147) | 91(121) | 110(147) | 175(233) | 195(260) |
| 45(145) | 115(371) | 118(381) | 156(503) | 174(561) | 215(694) |
| 3,327(124) | 3,900(143) | 3,946(144) | 4,289(157) | 4,452(163) | 5,387(197) |



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## TABLE 12

### Out-turn of M.B.B.S. Doctors per Million Population, 1965

| Zone/State | Out-turn per Million Population | Rank |
|---|---|---|
| 1 | 2 | 3 |
| Central Zone | 6 | V |
| Madhya Pradesh | 10 | 10 |
| Uttar Pradesh | 5 | 13 |
| Eastern Zone | 10 | IV |
| Assam | 14 | 7 |
| Bihar | 8 | 12 |
| Orissa | 10 | 10 |
| West Bengal | 13 | 8 |
| Southern Zone | 15 | I |
| Andhra Pradesh | 15 | 6 |
| Kerala | 18 | 4 |
| Madras | 13 | 8 |
| Mysore | 16 | 5 |
| Pondicherry | 78 | 1 |
| Western Zone | 11 | III |
| Gujarat | 8 | 12 |
| Maharashtra | 13 | 8 |
| Northern Zone | 14 | II |
| Jammu and Kashmir | 20 | 3 |
| Punjab | 12 | 9 |
| Rajasthan | 9 | 11 |
| Delhi | 65 | 2 |
| All-India | 11 | - |

TABLE

Out-turn of Women M. B. B. S. Doctors by

| Zone/State | 1958 | 1959 | 1960 |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| Central Zone | 63(15.9%) | 62(16.8%) | 118(22.0%) |
| Madhya Pradesh | 19(15.7%) | 24(19.8%) | 51(23.1%) |
| Uttar Pradesh | 44(16.1%) | 38(15.4%) | 67(21.2%) |
| Eastern Zone | 118(12.1%) | 104(10.8%) | 108(12.6%) |
| Assam | 8(10.4%) | 10(11.8%) | 1(2.2%) |
| Bihar | 12(9.2%) | 17(9.9%) | 34(15.6%) |
| Orissa | 10(14.9%) | 17(24.6%) | 14(27.5%) |
| West Bengal | 88(12.6%) | 60(9.4%) | 59(10.9%) |
| Southern Zone | 173(25.0%) | 143(17.1%) | 183(19.7%) |
| Andhra Pradesh | 55(24.4%) | 45(18.3%) | 65(20.0%) |
| Kerala | 22(27.2%) | 19(21.1%) | 22(25.0%) |
| Madras | 86(26.9%) | 61(18.8%) | 77(26.8%) |
| Mysore | 10(15.2%) | 18(10.2%) | 19(8.4%) |
| Pondicherry | - | - | - |
| Western Zone | 109(19.8%) | 138(21.9%) | 155(20.7%) |
| Gujarat | 10(12.2%) | 23(15.4%) | 38(16.0%) |
| Maharashtra | 99(21.2%) | 115(24.0%) | 117(23.0%) |
| Northern Zone | 91(36.1%) | 107(37.5%) | 119(37.4%) |
| Jammu and Kashmir | - | - | - |
| Punjab | 39(27.1%) | 54(30.3%) | 54(28.9%) |
| Rajasthan | 12(17.6%) | 14(20.5%) | 20(23.3%) |
| Delhi | 40(100.0%) | 39(100.0) | 45(100.0%) |
| All-India | 554(19.4%) | 554(18.0%) | 683(20.2%) |

Note: Percentage of women M. B. B. S. Doctors to total out-turn

13

Zone/State, 1958-65

| 1961 | 1962 | 1963 | 1964 | 1965 |
|---|---|---|---|---|
| 5 | 6 | 7 | 8 | 9 |
| 130(21.7%) | 133(21.2%) | 154(21.6%) | 142(21.8%) | 186(26.0%) |
| 61(24.6%) | 68(22.7%) | 88(22.6%) | 64(20.6%) | 105(30.6%) |
| 69(19.6%) | 65(19.9%) | 66(20.4%) | 78(22.8%) | 81(21.8%) |
| 114(12.8%) | 168(18.3%) | 150(17.4%) | 167(17.6%) | 248(19.3%) |
| 5(4.9%) | 7(11.9%) | 10(11.8%) | 9(8.7%) | 23(12.2%) |
| 31(15.4%) | 41(16.6%) | 49(21.7%) | 44(20.3%) | 80(19.8%) |
| 20(29.4%) | 35(35.7%) | 25(34.7%) | 34(25.4%) | 48(24.7%) |
| 58(11.1%) | 85(16.6%) | 66(13.8%) | 80(16.2%) | 97(19.6%) |
| 280(24.3%) | 315(25.1%) | 343(24.5%) | 373(24.9%) | 472(25.6%) |
| 107(25.7%) | 95(24.5%) | 105(26.9%) | 105(24.1%) | 144(25.3%) |
| 29(30.2%) | 45(37.5%) | 70(33.5%) | 47(24.4%) | 105(30.8%) |
| 91(28.7%) | 122(29.2%) | 104(25.2%) | 126(34.0%) | 143(30.2%) |
| 53(16.7%) | 45(14.7%) | 61(17.2%) | 85(18.6%) | 76(17.8%) |
| - | 8(32.0%) | 3(9.1%) | 10(24.3%) | 4(12.9%) |
| 195(23.4%) | 214(29.6%) | 260(33.3%) | 229(31.8%) | 218(28.0%) |
| 34(14.7%) | 46(24.2%) | 81(32.3%) | 31(19.9%) | 57(26.6%) |
| 161(26.7%) | 168(31.5%) | 179(33.8%) | 198(35.1%) | 167(28.4%) |
| 139(32.8%) | 137(32.4%) | 189(35.3%) | 199(31.4%) | 232(30.1%) |
| - | - | - | 15(32.6%) | 18(24.0%) |
| 50(25.1%) | 49(22.9%) | 77(28.5%) | 64(26.9%) | 66(23.2%) |
| 20(18.2%) | 22(24.2%) | 29(26.4%) | 38(21.7%) | 40(20.5%) |
| 69(60.0%) | 66(55.9%) | 83(53.2%) | 82(47.1%) | 108(50.2%) |
| 858(22.0%) | 967(24.5%) | 1,096(25.6%) | 1,110(24.9%) | 1,356(25.2%) |

has been shown in brackets.

# CHAPTER V

## STUDENT WASTAGE AND STAGNATION IN MEDICAL COLLEGES

### Introduction

33. An essential requirement of conserving national resources is that students joining educational institutions pursue their studies to completion and do so in the minimum period of time. A wastage, however, takes place during the period of studies either in the form of students discontinuing their studies or in the form of students prolonging their period of studies beyond the minimum period. Discontinuation of studies results in wastage of precious human resources and also in the under-utilisation of developed facilities. On the other hand, prolongation of the period of studies, arising from failure on the part of students to complete successfully a stage of studies, results in the blocking of physical resources which could have been utilised for educating and training more personnel. It also delays the availability of trained manpower to the nation at large. It is therefore important to know the extent of wastage rates firstly to locate causes of abnormal wastage and secondly to use the information for educational and utilisation planning. The problem acquires more importance if the subject of studies is a critical one in terms of demand for qualified personnel, and/or the financial and physical resources required for education and training in the particular subject are costly. Both these factors apply to the training of medical personnel of whom there is already a shortage and it has not been possible to augment the stock in keeping with the demand for medical care and services.

34. The purpose of this part of the study is to examine the problem of student wastage in medical colleges. The broad conclusions arrived at are based on an analysis of available data such as the total number of admissions in medical colleges each year, total number of students appearing at the qualifying examinations at different stages and the total number of students qualifying at each stage. It is hoped that the study will provide a basis for estimating the number of medical graduates who will be available for service after the minimum period of studies and also after a given number of years beyond the normal duration of the course, once the admission strength is known.

### Definitions

35. Student Wastage in medical colleges may be defined as the withdrawal of students from medical colleges before completing the full course

and obtaining the M. B. B. S., Degree. There are two measures of student wastage, viz.:

(i) Real Wastage: Some students admitted in a particular batch may fail to pass the final examination in the normal prescribed time. They may make subsequent attempts to pass and complete the course. But quite a few may not complete the course or pass all the relevant examinations irrespective of the time allowed to them. These students constitute the real wastage. This real wastage may be defined as the percentage of the number of students (may be termed as "drop-outs") who do not complete the course or pass all the relevant examinations irrespective of the time allowed, to the total number of students admitted in a particular batch. This real wastage can occur in the following ways:

A student may complete part or full duration of the course but

(a) may not appear in one of the examinations and discontinue;

(b) may appear and fail in one of the examinations and then discontinue;

(c) may appear, pass but may not join the next class and discontinue.

(ii) Time Wastage: arises out of a certain number of students taking more than the normal duration (5 years) to complete the requirements of the course and qualify for the award of M. B. B. S. Degree. Such students contribute to "Time Wastage". The mathematical model which gives time wastage factor is $\frac{Y - 5X}{5X}$. The details of this model are explained below:

Let $X$ = Students who completed the M. B. B. S. Course.
$X_5$ = Students who completed the M. B. B. S. Course in 5 years.
$X_6$ = Students who completed the M. B. B. S. Course in 6 years.
$X_7$ = Students who completed the M. B. B. S. Course in 7 years.
$5X$ = Number of minimum student years required for completing the M. B. B. S. Course.

and $Y = 5 X_5 + 6 X_6 + 7 X_7 + \ldots\ldots\ldots\ldots\ldots\ldots$ where Y represents the number of student years actually spent.

Methodology of Collection of Data

36. All the medical colleges in India were requested to furnish information about their students in the proforma designed for the purpose (see Appendix IV). In this proforma data were solicited for three batches admitted in the first year in 1954, 1955 and 1956. Each student admitted in a year was to be followed till he or she completed the course and passed all relevant examinations or dropped out. The proforma provided for 5 attempts in a year. The last batch, viz., the 1956 batch was chosen for the study as the duration of M. B. B. S. Course is about 5 years and for the students who could not pass the final examinations within the minimum time would be having more than one chance to appear in their respective examinations and complete the course by the end of 1964.

37. The total number of medical colleges existing at the time of this survey was 82 and out of these 36 colleges were established by 1954. Since the information was required for 1954, 1955 and 1956 batches, these 36 colleges were taken into consideration for collecting the desired information. In all only 13 medical colleges responded, out of which 7 medical colleges furnished consistent information which could be used for the purpose of the study. The data of these 7 medical colleges have been analysed for arriving at an estimate of the student wastage. Since the rates so far used for working out the estimates of perspective outturn from medical colleges during the Third Five Year Plan were largely based on records of one medical college, it seemed necessary to bring out the results of this study based on the data collected from seven medical colleges.

Student Wastage in Medical Colleges

38. The graduation pattern* of the students of 1954, 1955 and 1956 batches admitted to the M. B. B. S. Course is presented in Table 14. It will be observed that the pattern is fairly similar for all the three years

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* By graduation pattern is meant the number of students who graduate in 5 years, 6 years, 7 years and so on.

and the graduation percentage within 5 years is quite encouraging for the 1956 batch. In an overall assessment, 47% of the students graduate in the minimum time.

TABLE 14

Graduation Pattern of Student Progress in Medical Colleges

| Year of Admission | Intake | No. Graduating in | | | Total No. completing in 7 years |
|---|---|---|---|---|---|
| | | 5 years | 6 years | 7 years | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1954 | 535 | 221 (41.3%) | 243 (45.4%) | 40 (7.5%) | 504 (94.2%) |
| 1955 | 551 | 237 (43.0%) | 243 (44.1%) | 39 (7.1%) | 519 (94.2%) |
| 1956 | 548 | 307 (56.0%) | 181 (33.0%) | 25 (4.6%) | 513 (93.6%) |
| Total | 1,634 | 765 (46.8%) | 667 (40.8%) | 104 (6.4%) | 1,536 (94.0%) |

39. The "real wastage" and "time wastage" for these three batches are given in Table 15. It would be seen that in an overall assessment 6.0% of the students do not pass at all. The "time wastage" factor is highest for the 1954 batch. One significant point which emerges out of this analysis is that "time wastage" factor is showing a declining trend. Even though "real wastage" and "time wastage" are two different aspects of wastage, one giving wastage in terms of manpower and the other is giving wastage in terms of time, it is quite encouraging to note the declining trend of time wastage. This may indicate better selection procedures, better teaching, etc., about which the periodical conferences of Deans and Principals of Medical Colleges have made a number of recommendations, as described in Chapter I. However, the "time wastage" factor has also to be looked at in the proper perspective. If the "time wastage" factor is already at a low level, attempts to lower it further down may involve disproportionate costs. To what extent "time wastage" should be controlled and what will be its consequences in relation to financial resources are matters which require a more intensive study.

TABLE 15

"Real Wastage" and "Time Wastage" in Medical Colleges

| Year of Admission | Intake | Real Wastage | | Number who completed the course (X) | No. of minimum student years required (5X) | No. of student years actually spent (Y) | Time dwastage $\frac{Y-5X}{5X} \times 100$ |
|---|---|---|---|---|---|---|---|
| | | Drop-out | % | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1954 | 535 | 31 | 5.8 | 504 | 2,520 | 2,843 | 12.8 |
| 1955 | 551 | 32 | 5.8 | 519 | 2,595 | 2,916 | 12.4 |
| 1956 | 548 | 35 | 6.4 | 513 | 2,565 | 2,796 | 9.0 |
| Total | 1,634 | 98 | 6.0 | 1,536 | 7,680 | 8,555 | 11.4 |

40. The graduation pattern of students by sex is given in Table 16. The graduation pattern of women students is more encouraging than that of men students for all the three batches in so far as it relates to the minimum prescribed time. Later on, men students seem to show a better performance. However, there does not seem to be much variation for both the sexes as far as real wastage is concerned.

41. "Real Wastage" and "Time Wastage" in medical colleges by sex is given in Table 17. It will be seen that real wastage is 6.0% and 5.0% for men and women students respectively. There is not much variation with regard to real wastage in the case of men students for the three batches whereas in the case of women students, the real wastage of the 1956 batch is considerably more than the real wastage of 1954 and 1955 batches individually. The time wastage factor is more in the case of men students than women students. Figures for the 1954 and 1955 are similar but the figures for the 1956 batch are the lowest.

42. On the basis of the results so obtained, the following two points require careful scrutiny:

(i) Is the present wastage rate to be regarded as high?

(ii) If so, what measures will be necessary to lower down this wastage?

It must be mentioned that the situation of negligible wastage represents an ideal situation and is unrealistic under practical conditions. Some wastage is bound to occur on account of the following reasons:

(i) Students joining medical colleges may be the 'best' available but all of them may not have sufficient pre-medical preparation;

(ii) Some students may not have a real aptitude for medical education but undertake medical education because of parental pressures;

(iii) Students with inherent ability may join medical colleges but may not apply themselves seriously to their studies;

## TABLE 16

### Graduation Pattern of Student Progress by Sex in Medical Colleges

| Year of Admission | Intake | | Number graduating in | | | | | | Total number completing in 7 years | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 5 years | | 6 years | | 7 years | | | |
| | M | W | M | W | M | W | M | W | M | W |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1954 | 379 | 156 | 144 (38.0%) | 77 (49.3%) | 175 (46.2%) | 68 (43.6%) | 36 (9.5%) | 4 (2.6%) | 355 (93.7%) | 149 (95.5%) |
| 1955 | 381 | 170 | 145 (38.1%) | 92 (54.1%) | 176 (46.2%) | 67 (39.4%) | 34 (8.9%) | 5 (2.9%) | 355 (93.2%) | 164 (96.5%) |
| 1956 | 342 | 206 | 185 (54.1%) | 122 (59.2%) | 120 (35.1%) | 61 (29.6%) | 17 (5.0%) | 8 (3.9%) | 322 (94.2%) | 191 (92.7%) |
| Total | 1,102 | 532 | 474 (43.0%) | 291 (54.7%) | 471 (42.7%) | 196 (36.8%) | 87 (7.9%) | 17 (3.2%) | 1,032 (93.6%) | 504 (94.7%) |

M = Men Students.
W = Women Students.

Note:- Figures within brackets represent the percentage to the total intake made in a year.

TABLE 17

"Real Wastage" and "Time Wastage" in Medical Colleges by Sex

| Year of Admission | Intake | | Real Wastage | | Number who completed the course (X) | | No. of minimum student years required (5X) | | No. of student years actually spent | | Time wastage $\frac{Y - 5X}{5X} \times 100$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | W | M | W | M | W | M | W | M | W | M | W |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1954 | 379 | 156 | 24 (6.3%) | 7 (4.5%) | 355 | 149 | 1,775 | 745 | 2,022 | 821 | 13.9% | 10.2% |
| 1955 | 381 | 170 | 26 (6.8%) | 6 (3.5%) | 355 | 164 | 1,775 | 820 | 2,019 | 897 | 13.7% | 9.4% |
| 1956 | 342 | 206 | 20 (5.8%) | 15 (7.3%) | 322 | 191 | 1,610 | 955 | 1,764 | 1,032 | 9.6% | 8.1% |
| Total | 1,102 | 532 | 70 (6.4%) | 28 (5.3%) | 1,032 | 504 | 5,160 | 2,520 | 5,805 | 2,750 | 12.5% | 9.1% |

M = Men Students.
W = Women Students.

(iv) The quality and ratio of teaching staff to the students may not be satisfactory to retain student interest;

(v) The type, quality and spirit of the examination system as also institutional and residential facilities may be defective;

(vi) Some students may find it necessary to drop out of medical college for personal, professional or financial reasons;

(vii) Some students may be obliged to repeat one or more years of study before they are successful in obtaining their degrees.

43. A study on student wastage in Engineering Educational Institutions conducted in the Institute of Applied Manpower Research to estimate the rate of student wastage in Engineering Institutions indicated that student wastage is 15.6% in the case of first degree institutions where the duration of the course is four years and 19.3% in the five-year degree course. A comparison of these results with the findings on medical students suggests that the rate of student wastage in the medical field is not alarming. Mention may also be made here of another study "A Report on Medical Education" by T. Lakshminarayana concerning the problem of student wastage in medical colleges. This study indicated wastage rate of 10% in respect of medical graduates. However, this study was subject to two limitations namely (a) it related to a single college (Lady Hardinge Medical College, New Delhi) and (b) the students taken into consideration were women students only. It would be useful to have some idea about student wastage in other advanced countries also. To quote the example of U.S.A., about 9 out of every 10 students admitted to U.S. medical schools stay on to graduate* which means the wastage rate is of the order of 10%.

44. Compared to wastage rates indicated above, the present study indicates that the rate of student wastage in the medical field is considerably less. Whereas some wastage is bound to occur in any situation, reduction of wastage to the minimum possible is a desirable objective. Corrective action lies in introducing proper vocational guidance, sound selection procedures, counselling during the period of the course to improve motivation wherever this is lacking, good teaching staff and a sound assessment system.

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* Source: U.S. Deptt. of Health Education and Welfare, Health Manpower Source Book, Sec. 9, p. 23 — Physicians, Dentists, Nurses.

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## APPENDIX I

List of Medical Colleges in India, Admissions and Out-turn, 1965

| Name of Medical College | Admission | | Out-turn | |
|---|---|---|---|---|
| | Total | Women | Total | Women |
| 1 | 2 | 3 | 4 | 5 |
| Andhra Pradesh | | | | |
| 1. Andhra Medical College, Vishakhapatnam (1923) | 150 | 33 | 115 | 29 |
| 2. Guntur Medical College, Guntur (1946) | 147 | 52 | 135 | 32 |
| 3. Kurnool Medical College, Kurnool (1957) | 112 | 19 | 65 | 12 |
| 4. Osmania Medical College, Hyderabad (1921) | 180 | 52 | 99 | 40 |
| 5. Gandhi Medical College, Hyderabad (1954) | 95 | 28 | 62 | 21 |
| 6. Rangaraya Medical College, Kakinada (1958) | 149 | 25 | 74 | 7 |
| 7. Kakatiya Medical College, Warangal (1959) | 69 | 13 | 20 | 3 |
| 8. S.V. Medical College, Tirupati (1960) | 99 | 39 | - | - |
| | 1,001 | 261 | 570 | 144 |

(Continued on next page)

(Continued from previous page)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Assam | | | | |
| 9. Assam Medical College, Dibrugarh (1947) | 168 | 41 | 134 | 21 |
| 10. Gauhati Medical College, Gauhati (1960) | 112 | 21 | 54 | 2 |
| 11. Medical College, Silchar (1962) | | | | |
| | 280 | 62 | 188 | 23 |
| Bihar | | | | |
| 12. Darbhanga Medical College, Laheriasarai (1946) | 168 | 30 | 148 | 28 |
| 13. Rajendra Medical College, Ranchi (1957) | 170 | 30 | 105 | 22 |
| 14. Medical College, Jamshedpur (1960) | 75 | 7 | - | - |
| 15. Prince of Wales Medical College, Patna (1925) | 178 | 42 | 152 | 30 |
| | 591 | 109 | 405 | 80 |
| Gujarat | | | | |
| 16. B. J. Medical College, Ahmedabad (1946) | 210 | 67 | 71 | 25 |
| 17. Medical College, Baroda (1949) | 125 | 19 | 64 | 13 |
| 18. M. P. Shah Medical College, Jamnagar (1955) | 145 | 33 | 57 | 13 |

(Continued on next page)

(Continued from previous page)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 19. Municipal Medical College, Ahmedabad (1963) | 101 | 39 | - | - |
| 20. Medical College, Surat (1964) | 60 | 17 | - | - |
| | 641 | 175 | 192 | 51 |
| Jammu and Kashmir | | | | |
| 21. Medical College, Srinagar (1959) | 97 | 34 | 75 | 18 |
| Kerala | | | | |
| 22. Medical College, Trivandrum (1951) | 186 | 49 | 195 | 61 |
| 23. Medical College, Calicut (1957) | 180 | 43 | 129 | 38 |
| 24. Medical College, Kottayam (1961) | 74 | 24 | 17 | 6 |
| 25. Medical College, Alleppey (1963) | 60 | 10 | - | - |
| | 500 | 126 | 341 | 105 |
| Madhya Pradesh | | | | |
| 26. Medical College, Jabalpur (1955) | 149 | 45 | 87 | 38 |
| 27. M.G.H. Medical College, Indore (1948) | 150 | 46 | 97 | 28 |
| 28. G.R. Medical College, Gwalior (1946) | 150 | 42 | 89 | 14 |
| 29. Gandhi Medical College, Bhopal (1955) | 150 | 40 | 70 | 25 |

(Continued on next page)

1850

(Continued from previous page)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 30. Medical College, Rewa (1963) | 57 | 13 | - | - |
| 31. Medical College, Raipur (1963) | 60 | 15 | - | - |
| | 716 | 191 | 343 | 105 |
| Madras | | | | |
| 32. Madras Medical College, Madras (1850) | 71 | - | 122 | 48 |
| 33. Stanley Medical College, Madras (1938) | 142 | 39 | 138 | 22 |
| 34. Kilpauk Medical College, Kilpauk, Madras (1960) | 76 | 20 | 35 | 11 |
| 35. Madurai Medical College, Madurai (1954) | 145 | 44 | 97 | 31 |
| 36. Christian Medical College, Vellore (1942) | 52 | 22 | 30 | 18 |
| 37. Thanjavur Medical College, Thanjavur (1958) | 124 | 29 | 51 | 13 |
| 38. Medical College, Chingleput (1965) | 50 | - | - | - |
| 39. Medical College, Tirunelveli (1965) | - | - | - | - |
| | 660 | 154 | 473 | 143 |
| Maharashtra | | | | |
| 40. Grant Medical College, Bombay (1845) | 202 | 75 | 144 | 42 |

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| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 41. Seth G.S. Medical College, Bombay (1925) | 160 | 74 | 54 | 22 |
| 42. Topiwala National Medical College, Bombay (1921) | 140 | 79 | 51 | 27 |
| 43. B.J. Medical College, Poona (1946) | 199 | 69 | 140 | 41 |
| 44. Medical College, Nagpur (1947) | 201 | 55 | 146 | 31 |
| 45. Government Medical College, Aurangabad (1956) | 100 | 11 | 52 | 4 |
| 46. Armed Forces Medical College, Poona (1948) | 116 | 12 | - | - |
| 47. Medical College, Miraj (1962) | 60 | 14 | - | - |
| 48. Medical College, Sholapur (1963) | 100 | 15 | - | - |
| 49. Medical College, Sion, Bombay (1965) | 60 | 31 | - | - |
| | 1,338 | 435 | 587 | 167 |
| Mysore | | | | |
| 50. Medical College, Mysore (1924) | 205 | 36 | 122 | 18 |
| 51. Kasturba Medical College, Manipal (1953) | 225 | 28 | 122 | 11 |
| 52. Karnatak Medical College, Hubli (1957) | 198 | 35 | 109 | 26 |
| 53. Bangalore Medical College, Bangalore (1955) | 199 | 55 | 73 | 21 |

(Continued on next page)

(Continued from previous page)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 54. St. John's Medical College, Bangalore (1963) | 50 | 14 | - | - |
| 55. Medical College, Bellary (1961) | 113 | 5 | - | - |
| 56. Medical College, Belgaum (1964) | 121 | 9 | - | - |
| 57. Medical College, Gulbarga (1963) | 113 | 7 | - | - |
| 58. Medical College, Devangere (1965) | 119 | 5 | - | - |
| | 1,543 | 194 | 426 | 76 |
| Orissa | | | | |
| 59. Medical College, Burla, Sambalpur (1959) | 200 | 35 | 44 | 8 |
| 60. S.C.B. Medical College, Cuttack (1944) | 200 | 25 | 150 | 40 |
| 61. Medical College, Berhampur (1962) | 102 | 8 | - | - |
| | 502 | 68 | 194 | 48 |
| Punjab | | | | |
| 62. Medical College, Amritsar (1943) | 151 | 25 | 125 | 21 |
| 63. Christian Medical College, Ludhiana (1953) | 47 | 22 | 37 | 18 |
| 64. Government Medical College, Patiala (1953) | 151 | 35 | 90 | 23 |
| 65. Medical College, Rohtak (1960) | 100 | 24 | 33 | 4 |
| 66. Dayanand Medical College, Ludhiana (1964) | 50 | 14 | - | - |
| | 499 | 120 | 285 | 66 |

(Continued on next page)

(Continued from previous page)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Rajasthan | | | | |
| 67. S.M.S. Medical College, Jaipur (1947) | 191 | 48 | 124 | 29 |
| 68. Bikaner Medical College, Bikaner (1959) | 156 | 26 | 71 | 11 |
| 69. Medical College, Udaipur (1962) | 151 | 24 | - | - |
| 70. Medical College, Ajmer (1965) | 73 | 21 | - | - |
| 71. Medical College, Jodhpur (1965) | 75 | 7 | - | - |
| | 646 | 126 | 195 | 40 |
| Uttar Pradesh | | | | |
| 72. K.G. Medical College, Lucknow (1911) | 192 | 38 | 131 | 27 |
| 73. Medical College, Agra (1939) | 127 | 28 | 100 | 22 |
| 74. G.S.V.M. Medical College, Kanpur (1955) | 189 | 11 | 116 | 29 |
| 75. College of Medical Sciences, Varanasi (1960) | 75 | 22 | 25 | 3 |
| 76. Motilal Nehru Medical College, Allahabad (1961) | 64 | 13 | - | - |
| 77. Medical College, Aligarh (1962) | 50 | 15 | - | - |
| 78. Medical College, Meerut (1965) | - | - | - | - |
| | 697 | 127 | 372 | 81 |

(Continued on next page)

(Continued from previous page)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| West Bengal | | | | |
| 79. Medical College, Calcutta (1835) | 125 | 32 | 111 | 28 |
| 80. R. G. Kar Medical College, Calcutta (1916) | 124 | 30 | 111 | 25 |
| 81. Nilratan Sircar Medical College, Calcutta (1948) | 125 | 47 | 108 | 27 |
| 82. Calcutta National Medical Institute, Calcutta (1948) | 181 | 44 | 137 | 17 |
| 83. Bankura Sammilani Medical College, Bankura (1956) | 50 | 3 | 28 | - |
| | 605 | 156 | 495 | 97 |
| Delhi | | | | |
| 84. Lady Hardinge Medical College (for Women), New Delhi (1916) | 100 | 100 | 78 | 78 |
| 85. All India Institute of Medical Sciences, New Delhi (1956) | 50 | 17 | 49 | 11 |
| 86. Maulana Azad Medical College, New Delhi (1958) | 124 | 38 | 88 | 19 |
| | 274 | 155 | 215 | 108 |
| Goa | | | | |
| 87. Medical College, Panaji (1963) | 65 | 19 | - | - |
| Pondicherry | | | | |
| 88. Medical College, Pondicherry (1956) | 65 | 11 | 31 | 4 |
| Himachal Pradesh | | | | |
| 89. Medical College, Simla (1964) | - | - | - | - |
| Grand Total | 10,520 | 2,523 | 5,387 | 1,356 |

Note: Figures within brackets indicate the year of foundation of the college.

## APPENDIX II

### Summary of Approximate Costs for Starting A Medical College

| S. No. | Description | Area (Sft.) | Amount (Rs.) | Remarks |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| (A) | 1. Cost of Land<br>2. Cost of Land Development) | - | - | The cost of land and land development will vary widely from place to place. |
| (B) | Cost of Building including Services | | | |
| | 1. Medical College | 1,65,000 (Built-up area) | 33,00,000 | Based on a rate of Rs. 20 per sft. of built-up area as cost of construction. This will vary from region to region depending upon cost index. |
| | 2. Hostels | 1,47,000 (Built-up area) | 27,19,500 | - do - Rs. 18.50 - do - |
| | 3. *Residential accommodation for staff | | | |
| | (a) Principal/Dean | 2,400 (Plinth area) | 48,000 | - do - Rs. 20.00 - do - |
| | (b) Professors/Asstt. Professors/ Lecturers/Registrars/Demonstrators | 1,49,140 (Plinth area) | 27,59,090 | - do - Rs. 18.50 - do - |
| | (c) Technicians/Laboratory Assistants/Clerks/Class IV Staff | 63,000 (Plinth area) | 8,82,000 | - do - Rs. 14.00 - do - |
| | (d) Servant quarters and garages for Principal/Dean/Professors | 16,200 (Plinth area) | 1,62,000 | - do - Rs. 10.00 - do - |

| | | |
|---|---|---|
| (C) Cost of Equipment | 8, 25,000 | Departmentwise details follow |
| (D) Cost of Furniture | 4, 00,000 | |
| Total | 110, 95,590 or 110, 96,000 | |

## COST OF EQUIPMENT FOR STARTING A MEDICAL COLLEGE OF 150 ADMISSION

### ABSTRACT

| 1. DEPARTMENT OF ANATOMY: | Amount (Rs.) | Remarks |
|---|---|---|
| (i) Class Equipment | 50,550.00 | |
| (ii) Glass and Porcelainwares | 11,480.00 | |
| (iii) Miscellaneous Equipment | 8,935.00 | |
| (iv) Special Equipment | ** 30,525.00 | |
| | 101,490.00 | |
| **2. DEPARTMENT OF PHYSIOLOGY:** | | |
| (i) Class Equipment: | | |
| (a) Experimental and Human Physiology | 51,903.00 | |
| (b) Histology | 40,940.00 | |
| (c) Biochemistry | 30,793.00 | |
| | 123,636.00 | |
| (ii) Glass and Porcelainwares | 4,260.00 | |
| (iii) Miscellaneous Equipment | 3,781.00 | |
| (iv) Special Equipment | 86,350.00 | |
| | 218,027.00 | |

* The figures given against items 3(a) to 3(d) are for a college of 100 intake. The strength of the staff will increase proportionately as the intake goes upto 150.

** Break-up not given.

(Continued on next page)

| | |
|---|---|
| **3. DEPARTMENT OF PHARMACOLOGY:** | |
| (i) Class Equipment. | |
| (a) Experimental Pharmacology | 51,252.00 |
| (b) Pharmacy | 6,446.00 |
| | 57,698.00 |
| (ii) Glass and Porcelainwares | 4,890.00 |
| (iii) Miscellaneous Equipment | 18,918.00 |
| (iv) Special Equipment | 27,475.00 |
| | 1,08,981.00 |
| **4. DEPARTMENT OF PATHOLOGY:** | |
| (i) Class Equipment | 1,57,352.00 |
| (ii) Glass and Porcelainwares | 12,559,00 |
| (iii) Miscellaneous Articles | 8,477.00 |
| (iv) Special Equipment | 49,480.00 |
| | 2,27,868.00 |
| **5. DEPARTMENT OF PREVENTIVE AND SOCIAL MEDICINE AND FORENSIC MEDICINE** | |
| (i) Class Equipment etc. | 25,178.00 |
| (ii) For Rural Field Practice Centre | 19,304.00 |
| (iii) For two Sub-Centres | 1,000.00 |
| (iv) Art, Photographic, Projection Duplicating and Statistical Equipment | 40,200.00 |
| | 85,682.00 |
| 6. Central Laboratory | 35,122.00 |
| 7. Artist Modeller and Photographic Section | 17,822.00 |
| 8. Workshop and Electric Section | 29,750.00 |
| | 8,24,742.00 |
| or Rs | 8,25,000.00 |

Source: Report on Medical Colleges and Teaching Hospitals, Committee on Plan Projects. (Building Projects Team).

## APPENDIX III

## EXTRACTS FROM THE RECOMMENDATIONS OF THE MEDICAL COUNCIL OF INDIA ON UNDER-GRADUATE MEDICAL CURRICULUM

(Adopted by the Medical Council of India on 22/27th November, '64)

### I. Admission to the Medical Course

No candidate should be allowed to begin the medical curriculum proper until:

(i) He has completed the age of 17 years at the time of admission or will complete this age on 1st October of the year of his admission to the 1st M.B.B.S. Course.

(ii) He has passed:

(a) The Intermediate examination in the medical group of an Indian University which includes a practical test.

or

(b) The Intermediate examination in Arts or Science of an Indian University with Physics, Chemistry and Biology and which shall include a practical test in these subjects.

or

(c) B.Sc. examination of an Indian University if Physics, Chemistry and Biology have been taken in the Intermediate examination with a practical test in these subjects.

NOTE - A STUDENT WHO HAS PASSED THE B.Sc. EXAMINATION WITH TWO OF THE THREE SUBJECTS MENTIONED ABOVE, WOULD BE ADMITTED TO THE MEDICAL COURSE IF HE PASSED THE THIRD SUBJECT IN PRE-PROFESSIONAL

or

(d) The Intermediate examination held by the Board of Higher Secondary School and Intermediate Education with Physics, Chemistry and Biology which includes a practical test in each of these subjects recognised by Government.

or

(e) Any other examination which in scope and standard is found equivalent to the Intermediate Science examination of an Indian University taking Physics, Chemistry and Biology including a practical test in each of these subjects.

or

(f) The Pre-Professional Examination (Pre-Medical) after passing either the Higher Secondary School Examination or the Matriculation or equivalent examination and the Pre-University examination with Physics, Chemistry, Biology and English.

(iii) And the candidate has passed the above examination with compulsory English.

Note:

(1) Candidates may be selected by a competitive examination at which 50% of the marks may be awarded for the written part, 30% for the last academic examination performance and 20% for the interview at which credit would be given for physical fitness, aptitude, personality, sports, N.C.C., etc.

or

An interview only may be conducted by a Board of Five Senior Teachers of the Medical College to which he seeks admission. The Principal shall act as Convener at which credit shall be given to the marks obtained at the last academic qualifying examination.

In States where there are more than one Medical College, a common Board is recommended on similar lines with all the Principals as members.

(2) Candidates should have obtained not less than 45% marks at any of the University examination, mentioned under I (ii).

(3) The Pre-Medical course may be conducted either at a Medical or Science College.

II. The Medical Curriculum

The Council recommends the following:-

Period of Study

1. That every student shall undergo a period of certified study extending over $4\frac{1}{2}$ academic years from the date of commencement of his study of the subjects comprising the Medical Curriculum to the date of completion of the examination.

2. That the first $1\frac{1}{2}$ years shall be occupied in the study of the pre-clinical subjects and that no student shall be permitted to study the clinical group of subjects until he has passed in all the Pre-clinical subjects.

3. That throughout the whole period of study attention of the student shall be directed by his teachers to the importance of the preventive aspects of Medicine and of measures for promotion of positive health.

4. That introduction of Medical students in out-patient and in-patient departments of the hospital be encouraged from the very beginning of their Medical studies in order to stimulate their intrinsic interest in their responsibilities and widening their outlook as regards the sick.

5. That the number of holidays shall be restricted and the total number of full working days shall not be less than 250 days in a year. Saturdays shall be full working days and vacation and other holidays suitably adjusted.

The following subjects shall be included in the curriculum and Examination.

III. Pre-clinical Subjects

(IN THE TEACHING OF THESE SUBJECTS STRESS SHALL BE LAID ON FUNDAMENTAL AND BASIC PRINCIPLES OF SCIENCES. DETAILS SHALL BE AVOIDED).

1. Human Anatomy and Physiology:- These courses shall include:

   (a) Dissection of the entire body. Emphasis on unimportant details be avoided.

   (b) Elements of human embryology.

   (c) Histology.

   (d) The principles of General Physiology, including Biochemistry and Bio-physics, and in the case of those Universities in which no provision has been made for teaching the subject in the Pre-Medical Course, Organic Chemistry. Amphibian experiments by student be considerably reduced and stress be laid on demonstrations in Mammalian and Human Physiology. The student should be encouraged to do practicals in addition to demonstrations.

   (e) Nutrition and dietetics.

   (f) Elements of the methods of clinical examination including the use of the common instruments and the examination of body fluids, with demonstrations on both normal and abnormal living subjects.

(The demonstration of structure/and function in the teaching of anatomy and physiology should be done as far as possible on the living human subject, and should include the information obtained from radiology).

2. Introduction to Statistics.

3. Normal Psychology.

4. Introduction to Social Medicine and Environmental factors pertaining to health. (Ref. foot note).

   Note: There should be vertical and horizontal integration of teaching.

IV. Clinical Subjects - 3 years

(N. B. : Throughout the whole period of study the attention of the student shall be directed by the teachers to the importance of Preventive and social aspects of Medicine and emphasis shall be laid on practical training, Seminar and Conferences, etc. ).

1. Pathology and Microbology to include:

(a) General and Special Pathology and Morbid Anatomy.
(b) Clinical and Chemical Pathology.
(c) Microbiology and Parasitology.
(d) Immunology.

Teaching of Pathology and Microbology should be for $1\frac{1}{2}$ years. There should be teaching of Applied Pathology for the rest of the clinical period.

Each student shall be required to have received practical instruction in the conduct of autopsies, including Medicolegal and to have acted as a post-mortem clerk in at least ten cases.

2. Pharmacology including Pharmaco-Therapeutics and Toxicology and study of all drugs in Indian Pharmacopia.

Experimental Pharmacology by demonstrations and Practicals by students.

3. Forensic Medicine - This course shall include instruction in the duties which devolve upon practitioners in their relation to the States, and on the generally recognised rules of medical ethics.

4. Preventive and Social Medicine.

5. Medicine, including:

(a) A course of systematic instruction in the principles and practice of Medicine including paediatrics.

(b) A medical clinical clerkship for a period of nine months including out-patients department.

(c) During the period of medical ward clerkship a period of not less than one month shall be spent as a resident pupil.

(d) Lecture-demonstrations, Seminars and Conferences in clinical Medicine and attendance on general in-patient, and out-patient practice for at least 3 years which may run concurrently with other clinical subjects.

(e) Instruction in Therapeutics and prescribing including (i) Pharmacological Therapeutics, (ii) the methods of treatment by vaccines and sera and hormones, (iii) Physiotherapy, (iv) dietetics, and (v) the principles of nursing, (vi) use of radio-isotopes and electronic therapy, and (vii) indication of Surgical-therapy.

(f) Instruction in Applied Anatomy and Physiology throughout the period of clinical studies.

Attendance at each of the following departments for a period of 15 days during which there shall be not less than six lecture demonstrations:

1. Acute Infectious Diseases.
2. Tuberculosis.
3. Psychological Medicine and Psychiatry.
4. Diseases of Skin and Leprosy.
5. Radiology and electro-therapeutics in their application to medicine.
6. Dietetics, nutrition and principles of nursing.
7. Physio-therapy.

(Instructions in these subjects (1) - (7) shall run concurrently with course of instructions in Medicine).

6. Surgery, including:

(a) A course of systematic instruction in the principles and practice of Surgery.

(b) A Surgical clerkship for a period of nine months including out-patients department.

(c) During the period of surgical ward clerking a period of not less than one month should be spent as resident pupil.

(d) Lecture-demonstrations, Seminars and Conferences in Clinical Surgery and attendance on general in-patient and out-patient practice for at least 3 years, which may run concurrently with other clinical subjects.

(e) Practical instruction in Surgical methods including first aid.

(f) Instruction in the administration of anaesthetics.

(g) A course of instruction in operative Surgery.

(h) Instruction in applied anatomy and physiology throughout the period of clinical studies.

(i) Attendance at each of the following departments for a period of 15 days during which there shall be not less than six lecture demonstrations:

(1) Radiology and electro-therapeutics in their application to surgery.
(2) Venereal diseases.
(3) Orthopaedics.
(4) Dental diseases.
(5) Surgical diseases of infancy and childhood.
(6) Anaesthesiology.

(Instructions in these subjects (1) - (6) may run concurrently with course of instructions in Surgery).

(j) Training in Ophthalmology, including refraction and the use of the Ophthmoscope, with hospital attendance for a period of two months.

(k) TRAINING IN EAR, NOSE AND THROAT DISEASES WITH HOSPITAL ATTENDANCE FOR ONE MONTH.

7. Midwifery, Diseases of women and infant and maternal welfare including:

(a) Courses of systematic instruction in the principles and practice of Midwifery, Gynaecology, and Infant and Maternal Welfare including the applied anatomy and physiology of pregnancy and labour.

(b) Lecture-demonstrations in Clinical Midwifery, Gynaecology, and Infant and Maternal Welfare and attendance on the practice of maternity hospital or the maternity wards of a general hospital including (a) ante-natal care and (b) the management of the peurperium, and on in-patient and out-patient gynaecological practice for a period of at least six months.

This period should be devoted exclusively to instruction in these subjects, and should be subsequent to the medical clerkship Section 5 (b), and the Surgical clerkship Section 6(b). Not less than two-thirds of the hours of clinical instruction shall be given to midwifery, including ante-natal care and infant and maternal welfare.

(c) Of this period of clinical instruction not less than one month shall be spent as a resident pupil either in a maternity hospital or in a hostel attached to a maternity hospital or to the maternity wards of a general hospital.

During this period, the student shall conduct at least twenty cases of labour under adequate supervision.

A certificate showing the number of cases of labour attended by the students in the maternity hospital and in the patients homes respectively, should be signed by a responsible Medical Officer on the staff of the hospital and should state:

(i) That the student has personally conducted each case during the course of labour, making the necessary abdominal and other examinations under the supervision of the certifying officer, who should describe his official position.

(ii) That satisfactory written histories of the cases conducted, including when possible ante-natal and post-natal observations, were presented by the student and initialled by the supervising officer.

8. Paediatrics

A clinical clerkship for not less than three months, out of which one month may be in the children's ward in the department of Medicine; one month in the children's ward in the department of Surgery and one month in the Infants ward in the department of Obstetrics. This training will form part of clinical clerkships in the departments of Medicine, Surgery and Obstetrics and will be done within the period already allotted for the same.

Note: (1) <u>THE TOTAL NUMBER OF TEACHING BEDS IN A HOSPITAL MAY BE DISTRIBUTED AS FOLLOWS:</u>

One-third for Medicine.

One-third for Surgery.

ONE-THIRD FOR SPECIALITIES INCLUDING OBSTETRICS AND GYNAECOLOGY. (More beds should be allotted to Obstetrics and Gynaecology).

V. Preventive and Social Medicine

Preclinical Period - 16 months.

Hours Available - 50.

| Subject | Didactic Lecturers (Hours) |
|---|---|
| A. Orientation Courses: | |
| 1. Introductory Lectures | 6 |
| 2. Genetics | 4 |
| 3. Normal Growth and Development | 3 |
| B. Applied Courses: | |
| 1. Bio-Statistics | 8 |
| 2. Introduction to Psychology | 6 |
| 3. Introduction to Sociology | 6 |
| 4. Personal Hygiene through different periods of life | 4 |

Clinical Periods - 3 years

| Subject | Didactic Lecturers (Hours) |
|---|---|
| 1 | 2 |
| 1. Man and Environment | 20 |
| 2. Nutrition | 15 |
| 3. Medical Statistics | 10 |
| 4. Integrated Teaching | - |

(Continued on next page)

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| 1 | 2 |
|---|---|
| 5. Epidemiology | 9 |
| 6. Communicable diseases - Prevention and control | 25 |
| 7. Preventive aspects of non-communicable diseases | 4 |
| 8. Demography and family planning | 6 |
| 9. Preventive medicine | 6 |
| 10. Integrated teaching | - |
| 11. Social Medicine | 6 |
| 12. Applied aspects of Genetics | 3 |
| 13. Medical care | 12 |
| 14. Public Health Administration | 12 |
| 15. Health Education | 2 |
| 16. Integrated teaching | - |
| 17. Revision | - |

Breakdown of Hours

| Period | Lectures | Visits | Practical Seminars | Total |
|---|---|---|---|---|
| Pre-clinical Period | 37 | 4 | 9 | 50 |
| Clinical Period | 129 | 29 | 92 | 250 |
| Total | 166 | 33 | 101 | 300 |

## APPENDIX IV

## INSTITUTE OF APPLIED MANPOWER RESEARCH

P-2 Study on Pupil Wastage in Medical Degree Institutions

1. Name of the Institution:

2. Duration of Course:

3. Minimum qualification prescribed for admission:

4. First Year

| | Batch admitted in the year | | | | | |
|---|---|---|---|---|---|---|
| | 1954 | | 1955 | | 1956 | |
| | M | F | M | F | M | F |
| (a) No. of students admitted in this batch: | | | | | | |
| (b) No. presented in the 1st M.B.B.S. exam.: | | | | | | |
| (c) No. passing in the 1st attempt: | | | | | | |
| (d) Of those who failed: | | | | | | |
| (i) No. passed in the 2nd attempt: | | | | | | |
| (ii) 3rd attempt: | | | | | | |
| (iii) 4th attempt: | | | | | | |
| (iv) 5th and higher attempts: | | | | | | |
| (v) No. who dropped out: | | | | | | |

5. Second Year

Of those who passed the 1st year exam. (c+d)

| | | | | | | |
|---|---|---|---|---|---|---|
| (e) Total No. of students enrolled in the 2nd year: | | | | | | |
| (f) No. presented for the 2nd M.B.B.S. exam.: | | | | | | |
| (g) No. passed in the 1st attempt: | | | | | | |

| (h) Of those who failed: | Batch admitted in the Year | | | | | |
|---|---|---|---|---|---|---|
| | 1954 | | 1955 | | 1956 | |
| | M | F | M | F | M | F |

(i) No. passed in the 2nd attempt:
(ii) 3rd attempt:
(iii) 4th attempt:
(iv) 5th and higher attempts;
(v) No. who dropped out;

6. Third Year

Of those who passed the 2nd year exam. (g+h)

(i) Total No. of students enrolled in the 3rd year;

(j) No. presented in the 3rd M.B.B.S. exam.:

(k) No. passed in the 1st attempt:

(l) Of those who failed:

(i) No. passed in the 2nd attempt:
(ii) No. passed in the 3rd attempt :
(iii) 4th attempt:
(iv) 5th attempt and higher attempts:
(v) No. who dropped out:

7. Fourth Year

Of those who passed the 3rd year exam. (k+l)

(m) Total No. of students enrolled in the 4th year.

(n) No. presented in the 4th M.B.B.S. exam:

(o) No. passing in the 1st attempt:

(p) Of those who failed:

| | Batch admitted in the Year | | | | | |
|---|---|---|---|---|---|---|
| | 1954 | | 1955 | | 1956 | |
| | M | F | M | F | M | F |

(i) No. passing in the 2nd attempt:
(ii) No. passing in the 3rd attempt:
(iii) in 4th attempt;
(iv) in 5th and higher attempts:
(v) No. who dropped out:

8. Fifth Year

Of those who passed the 4th M.B.B.S. exam. (o+p)

(q) Total No. of students enrolled in the 5th year:

(r) No. presented in the 5th M.B.B.S. exam.:

(s) No. passing in the 1st attempt:

(t) Of those who failed:

(i) No. passing in the 2nd attempt:
(ii) 3rd attempt:
(iii) 4th attempt:
(iv) 5th and higher attempts:
(v) No. who dropped out:

9. Usually how many university examinations are held in a year; in which months?

## INSTRUCTIONS

P-2. Study of Pupil Wastage in Medical Degree Institutions

1. The purpose of the data, being collected, in this proforma is to estimate the final wastage of medical graduate students and also the stagnation, separately for the male and female students. In this proforma the data are solicited for three batches admitted to the first year in 1954, 1955 and 1956. Each student admitted in a year is to be followed up till he completes the course and passes all relevant examination or drops out. The Proforma provides for five attempts for the examination in each year. Examinations in certain years, namely, first and third years, are college examinations only and not university examinations. The data asked for in this proforma, is very important in estimating how many of the students admitted in a year will be available for actual employment and utilisation after a given number of years beyond the normal duration of the course.

2. Item 2. Against item 2 the duration of the course may be given. (excluding the internship period).

3. Item 3. Against question 3 the minimum qualification required for eligibility for admission to medical college may be furnished.

3(a). Whether pre-medical course is a part of the medical college training or outside medical college may be clearly stated.

4. Item 4. The total number of students admitted into the institution in any of the specified years is to be given separately for males and females. Of these the number who are presented to the first M. B. B.S. examination is to be given against item (b). The number who pass in the first attempt is to be given against item (c), and against item (d) is to be given the number of students (males and females separately), who pass the first M. B. B. S. exam. in the second attempt, third attemp etc. Under column V the number who dropped out of the college may be furnished. The total under d1 to d5 must be equal to the figure (a-c). No. of students who dropped out in the first year due to various reasons is to be given against d(v).

5. It should be remembered that only students belonging to the batch under consideration is to be accounted for under item 4.



INSTITUTE OF

6. Items 5-8. Against item 5(e) the number of students who are in the second year of the course, from amongst those who pass the first M. B. B. S. exam. irrespective of the attempt at which they pass is to be given.

7. The same instruction apply to other sub-items of items 5, 6, 7 and 8.

8. Item 9. The month in which the university examinations are held usually are to be given.

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